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MILWAUKEE, AUGUST, 1884.

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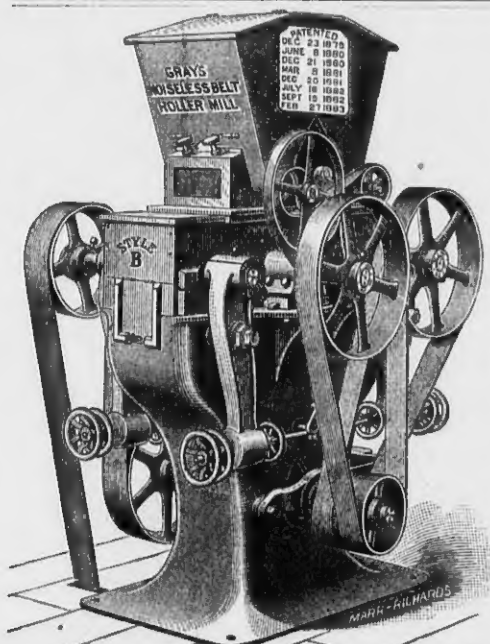
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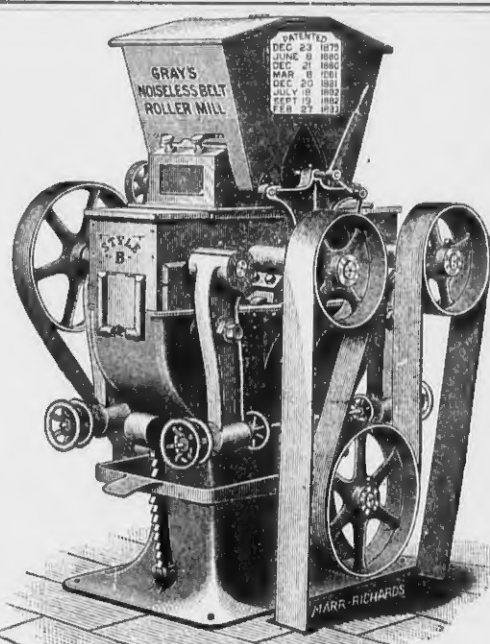
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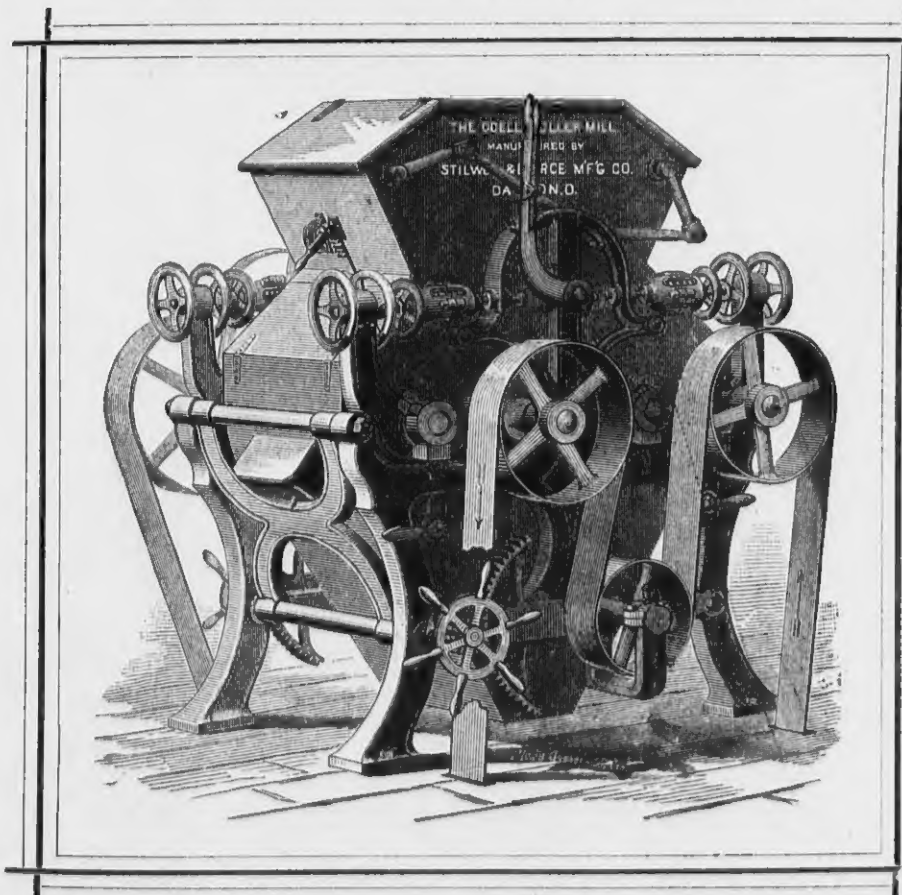
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Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with Unparalleled Success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Rolls and System, will be furnished on application to all who desire to investigate.



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Invented and Patented by **U. H. ODELL**, the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

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3. It is the only Roller Mill in which *one movement of a hand-lever spreads the rolls apart and shuts off the feed at the same time*. The reverse movement of this lever brings the rolls back again exactly into working position and *at the same time turns on the feed*.

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OUR CORRUGATION DIFFERS FROM ALL OTHERS, AND PRODUCES

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Wegmann's Patent Porcelain Rolls.

Unexcelled for reducing Middlings to Flour.

Far ahead of Smooth Iron or Scratch Rolls and entirely superseding the use of Mill Stones for this purpose.

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Gentlemen:—We are very much pleased with the whole eight set of Porcelain Rolls you put in our Mill. The two double sets sent us soon after starting up our mill last fall, we put in place of two run of stones for grinding our coarse Middlings.

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I am now operating your Improved Machine of increased size with nice adjustments, working without noise with Gray's Patent Belt Drive. The Flour it produces is beautifully grainy and strong, and its capacity two or three times more than the old Gear Machine.

It runs splendidly, gives no trouble, consumes less power than Mill Stones, dispenses with costly stone dressing and for reducing middlings and soft branny residuums and tailings is unequaled by any Machine, iron or stone, at least this is my opinion after five years of practical experience.

Yours truly,

JOHN HARVEY,

Head Miller Kings Co. Mills, Brooklyn, N. Y.

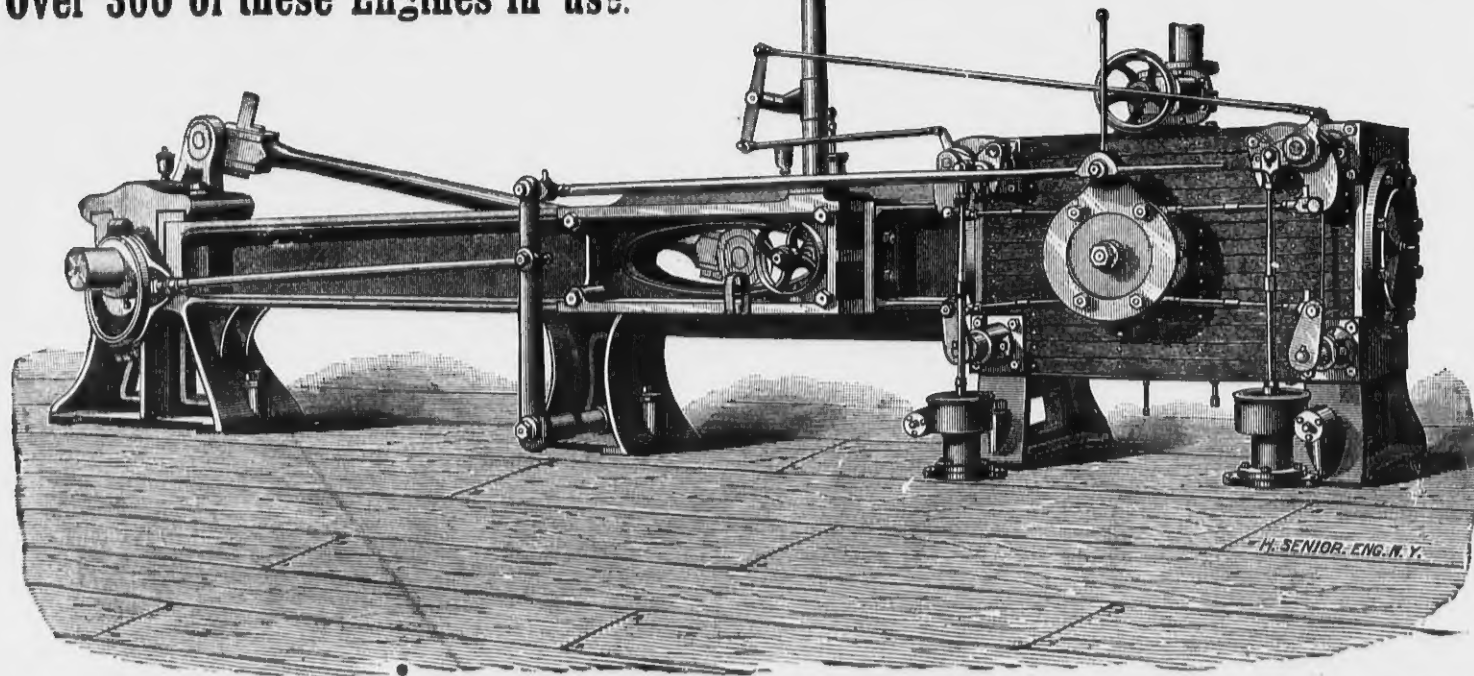
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The following is a partial list of Flouring Mill owners who are using the Reynolds' Corliss Engines.

J. B. A. Kern.....	Milwaukee, Wis.	Albert Wehausen.....	Two Rivers, Wis.	L. H. Lanier & Son ..	Nashville, Tenn.
LaGrange Mill Co.....	Red Wing, Minn.	Green & Gold.....	Faribault, Minn.	Wells & Nieman.....	Schuyler, Neb.
New Era Mills.....	Milwaukee, Wis.	Meriden Mill Co.....	Meriden, Minn.	Grundy Centre Milling Co.....	Grundy Centre, Iowa.
Daisy Flour Mills.....	Milwaukee, Wis.	Townshend & Proctor.....	Stillwater, Minn.	B. D. Sprague.....	Rushford, Minn.
Winona Mill Co.....	Winona, Minn.	Scoy & Brinkman.....	Great Bend, Kansas.	The Elsenmeyer Co.....	Little Rock, Ark.
W. D. Washburn & Co.....	Anoka, Minn.	Frank Clark.....	Hamilton, Mo.	A. W. Ogilvie & Co.....	Montreal, Canada.
Archibald, Schurmeier & Smith.....	St. Paul, Minn.	N. J. Sisson.....	Mankato, Minn.	Geo. Urban & Son.....	Buffalo, N. Y.
White, Listman & Co.....	La Crosse, Wis.	Jas. Campbell.....	Mannannah, Minn.	A. A. Taylor.....	Toledo, O.
Milwaukee Milling Co.....	Milwaukee, Wis.	C. J. Coggin.....	Wauconda, Ill.	Pindell Bros. Co.....	Hannibal, Mo.
Stuart & Douglas.....	Chicago, Ill.	J. J. Wilson.....	Algona, Iowa.	Kehler Milling Co.....	East St. Louis, Ill.
Stillwater Milling Co.....	Stillwater, Minn.	Ames & Hurlbut.....	Hutchinson, Minn.	Walsh, DeRoo & Co.....	Holland, Mich.
Otto Troost.....	Winona, Minn.	Lincoln Bros.....	Olivia, Minn.	Goodlander Mill and Elevator Co.....	Fort Scott, Kan.
E. T. Archibald & Co.....	Dundas, Minn.	Northey Bros.....	Columbus Junction, Iowa.	W. Seyk & Co.....	Kewaunee, Wis.
C. McCreary & Co.....	Sacramento, Cal.	Bryant Mill Co.....	Bryant, Iowa.	Topeka Mill and Elevator Co.....	Topeka, Kan.
Gardner & Mairs.....	Hastings, Minn.	David Keppord.....	Grundy Centre, Iowa.	Strong Bros.....	Graceville, Minn.
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Minnetonka Mill Co.....	Minnetonka, Minn.	W. A. Weatherhead.....	South Lyons, Mich.	Coman & Morrison.....	Fox Lake, Wis.
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Eagle Mill Co.....	New Ulm, Minn.	Forest Mill Co.....	Forest, Minn.		

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ROPE DRIVING IN FLOUR MILLS.

[A paper read before the British and Irish Millers' Association, June 26, 1884, by Mr. Norman Macbeth, of Bolton, England.]

Rope driving has now been in use in England for 12 or 13 years, but it is only within about the last eight years that its superiority has been recognized. In Lancashire especially the system has obtained great favor, and now in building a cotton mill hardly any other means of driving is thought of. The system has been in use so long now that its merits have been thoroughly tested under all sorts of conditions, and anyone adopting it at the present day may do so with the confidence that it is out of the experimental stage. Well known as it is, there are still certain points necessary to be considered in its application which will determine the difference between a good working arrangement and a bad one.

Before ropes came into general use in Lancashire, the American system of driving by means of large leather belts was widely adopted, and the system worked very well when properly carried out, when good leather belts could be obtained, when due care was taken of them, and when the shafts were kept properly levelled and squared; but the belts themselves were so enormously expensive that they became a very serious item in the expenses of working a mill, as the life of a belt could only with safety be reckoned at about ten years. Then there was the difficulty of getting thoroughly good belts and sound well tanned leather. On the other hand, ropes cost so little and will work well under such apparently adverse circumstances, and with little or no attention, that they soon became adopted in preference to belting.

Various forms of ropes and various materials have been used; some good and some bad, and others again only applicable under particular circumstances. The common form is the round three-strand rope, and the materials most in use are hemp and cotton.

The ropes run in grooves on the rims of the pulleys, and the power is usually taken off from the fly-wheel rim itself. The diameter of ropes varies from $\frac{1}{4}$ inch to $2\frac{1}{2}$ inch, the usual size being $1\frac{1}{2}$ inch diameter for main driving. The adoption of rope driving gives great facilities for placing the engine in a convenient and suitable position. The engine can be placed at the height which best suits the drawing and discharge of the water for condensing purposes; and laterally the most suitable position may be chosen, so long as the flywheel shaft lies parallel to the shafts in the mill. The distances between two shafts connected by ropes varies from 10 feet to 100 feet or more, depending on the size of pulleys and diameter of ropes employed and convenience. Any direction of drive may be adopted, except a perfectly vertical one; and it makes no practical difference in the working of the ropes if the slack side is at the top or the bottom. The speed at which ropes are run varies between 2,000 feet and 7,000 feet per minute, being usually from 4,000 feet to 5,500 feet in main driving; but it may be taken as a rule that the faster a rope runs the better and more steadily it will work. The power which can be transmitted varies in direct proportion to the speed at which the rope runs. The power that a rope will drive at a given speed is limited by the length of bearing it has on the smaller pulley on which it works, it being usual to transmit from 25 to 30 I.H.P. by a rope $1\frac{1}{2}$ inch diameter at 4,000 feet per minute, working on a 5-foot pulley. It is very important that the diameter of a hemp or cotton rope should not be more than 1-35th of the diameter of the smaller pulley, or the rope is soon ruined by being bent round too sharp a curve.

The form of groove for the rope to run in is an important point. It must be V-shaped, and the rope must not touch the bottom, but must wedge itself against the sides. The amount of this wedging action will depend greatly on the angle between the sides of the groove. If this angle is too acute the rope will wedge itself in so tightly as to cause a

great deal of power to be lost in pulling it out of the groove as it leaves the pulley. If the angle be too obtuse the ropes will slip, unless kept very tight. When the correct angle is adopted and the ropes are run at the proper tightness, they work without excessive wedging or slipping, the rope turning round as it works and wearing evenly all over. Experience has shown the angle of 45 degrees to be a good one, and it is generally adopted though sometimes a slightly more obtuse angle is preferred. There is often a guard or flange between the grooves, but it is not necessary, many people preferring the plain V groove.

The tensile driving strain upon a $1\frac{1}{2}$ inch rope whilst traveling 4,000 feet per minute and driving 25 I.H.P., is $\frac{25 \times 33,000}{4,000} = 206$ lbs.

This is a very light strain, and it will be easily seen that when four ropes are working on the same pulley and there is occasion to take off and splice one of the ropes, each of the others will then only have a strain of 274 lbs. on it, which it is quite easily able to stand. It may be thought that a working strain of something less than two cwt. is very little to be put on a $1\frac{1}{2}$ inch rope, but this is not all the rope has to bear; the strain caused by its own weight may be even more than this, depending upon the length of rope; and it must also be considered that after a rope has worked for some years its strength is very much decreased.

It is a common error to suppose that by putting an increased number of ropes to do a certain amount of work the durability of the ropes will be correspondingly increased. How erroneous this idea is will be seen when it is considered that it is not the actual tensile strain which is put on a rope that deteriorates it, as the greater part of the wear results from the rubbing of the strands of the rope against each other in bending round the pulley. This fact is proved by the way in which ropes are found to be worn when they are taken off. On cutting an old hemp or cotton rope in two, it is found that a considerable portion of the heart has been ground to powder. Many means have been tried to prevent this internal wear, such as making ropes with six or more external strands and a central core, but nothing has as yet been proved to excel the ordinary three-strand rope, and the best means of reducing the wear is to lubricate the strands before twisting them together and to lubricate the ropes sufficiently afterwards.

Good Manilla hemp ropes may be safely reckoned to last six or eight years, while good cotton ropes may be counted upon for ten years, when working ten hours a day. There are very great variations in the quality of the cotton yarn from which ropes are made.

Manilla hemp ropes generally cost about 56s. per cwt., really good cotton ropes from two to two and a half times as much.

Rope driving admits of application in many cases to old engines where it would be impossible to adopt belting. The width occupied by the ropes to drive, say 100 indicated horsepower, would be 9 inches; the width required by a belt to drive the same power would be about 12 inches, and when several belts have to drive off the same pulley, it is necessary to leave about three inches of space between the belts. This space is saved in the case of ropes.

One reason why the application of rope driving to old engines is limited, is that the flywheel race is very often so narrow that it will not allow of a width of pulley sufficient for the number of ropes required to drive the power. In these cases, the difficulty can often be got over by the use of steel wire ropes. These ropes will stand a much greater tensile strain than the hemp or cotton ropes, and will transmit a much greater power, provided the pulleys are large enough to give the necessary adhesion between rope and pulley. It is easily understood that a very strong rope is of no more use than a weak one if the adhesion is so small that the rope will slip before the strain necessary to transmit the power is put upon it. The wire ropes re-

ferred to have a steel wire rope core $\frac{1}{4}$ inch in diameter, the rope being made up to $1\frac{1}{2}$ inch in diameter by a leather covering. The minimum size of pulley for a wire rope should be not less than 170 times the diameter of the steel rope, say a 7-foot pulley for a rope $\frac{1}{4}$ inch in diameter. The larger the pulleys are, however, the better.

Where rope driving has to be applied to transmit the power from an old beam engine, it is generally impossible to drive directly from the flywheel, as the entablature of the engine is in the way if a large enough pulley is put in to give a fair speed of rope. It is generally preferable to drive from the second motion shaft, keeping in use the old toothed flywheel and pinion. In this case it is a matter of very vital importance that the rope pulleys on the second motion shaft be made as light as possible, so that they may not cause the pinion to overrun the engine and create backlash. In such cases, a particular construction of rope pulley is preferable to the ordinary cast iron one. In this the rim and boss are of cast iron, and the arms are wrought iron. In making these pulleys the arms are laid into the mould, and the rim is cast and allowed to cool. When the rim has thoroughly contracted, the boss is cast. To get rid of the contraction strains in the boss itself, it is split in several sections. Keys are afterwards fitted between the sections of the boss; it is then turned up on the sides, and wrought iron hoops are shrunk on it. By this means, a pulley is made which has no contraction strains whatever, and, as a consequence, it can be made much lighter than if entirely of cast iron. These pulleys weigh from $\frac{1}{4}$ to $\frac{1}{2}$ as much as ordinary pulleys, and are considerably stronger.

For very high rope speeds it is necessary to take every precaution against bursting. Such pulleys as described are running at periphery speeds of over 7,000 feet per minute. It would be unsafe to subject an ordinary cast iron pulley to the strains induced by such a speed.

The great advantages of running the ropes at high speeds are as follows: Fewer ropes are required, consequently the first cost is less, the wear and tear on the ropes are less, and they last longer, the friction is very greatly reduced, as the side pull on the bearings is exactly in proportion to the number of ropes, and has no relation whatever to the speed.

Compare two arrangements of rope driving at higher and lower speeds: say two shafts, each running 200 revolutions per minute, connected by ropes, transmitting, say 120 horse-power. If we put a five-foot pulley on each shaft, we shall require six ropes to transmit the power; but if we make the pulleys 10 feet diameter, three ropes will suffice. In both cases the shafts have the same strain to bear as regards torsion, but with 5-foot pulleys the side pull is from six ropes against three with the 10-foot pulleys; nearly twice as much rope is required for the smaller pulleys, and owing to their smaller radius, the six ropes would not last as long as the three. The ropes working on the larger pulleys could also be worked much slacker than those on the small ones, owing to their longer bearing on the groove. This again would decrease friction on the bearings and increase the life of the ropes.

As yet I have said nothing on the question of ropes versus spur wheels, and will now just point out some of the advantages of the new over the old system. Spur wheels form a rigid and inelastic connection between the engine and the machinery, while ropes are elastic to a considerable extent, and with a bad and unsteady engine machinery will often work well when driven by ropes where the opposite would be the case with wheel driving. The ropes, in fact, act as a cushion, taking up any sudden strain. Ropes are all in sight as they work, and anything wrong with them can be seen at once; whereas with wheels, something may easily go wrong without its being suspected until serious mischief is done. The breakage of a pair of wheels, especially

if on an upright or second-motion shaft, is a very serious matter, and yet it may happen at any time and stop a mill for days. A rope gives ample warning before breaking and can generally be taken off in time, and the others drive till it is replaced. The time required to splice a rope is about three hours, but all repairs to ropes, if properly managed, can be done at week ends. Ropes require taking up occasionally, the number of times depending on the work they have to do. A good rope with fair play should not require taking up more than three times in its life. It is sometimes desired to alter the speed of one shaft of a mill. When the mill is driven by wheels this is often a great undertaking, while in the case of ropes it simply means ordering one new pulley.

If it is required to stop, say one story of a mill, it is done by taking off the ropes. With wheels it is necessary to disturb the wheels themselves.

Again, ropes are cleaner than wheels, and the freedom from noise and jar is a great advantage; while over and above all these, the first cost of rope gearing is less. The heavy fixings and shafting, the massive gearing wall, and the heavy foundations required are done away with.

Against all these advantages there is only one slight disadvantage in rope driving. It sometimes absorbs more power in friction than wheels; but when ropes are run at a high speed, and their number is properly proportioned to the power, the advantage in favor of wheels is not such as to have any practical weight in the face of all their other disadvantages.

OPTION TRADING.

Option trading is a kind of speculation so near akin to gambling that, except for the disagreeable odor which attaches to the latter term, it is difficult for the unprejudiced observer to distinguish between them. Option trading is not dealing in actual merchandise. The buyer of an option in wheat or coffee or petroleum never expects to take delivery, much less does the seller expect to deliver; they are merely betting on fluctuations of price, and are looking to nothing more than paying or receiving a difference which is determined by formulated rules. A merchant, according to the old acceptance of that term—and the definition has not changed—required not only special business training, but long experience, sound judgment, ample credit founded upon substantial capital, boldness as distinguished from rashness in executing well matured plans, uncompromising integrity and untarnished reputation. These requisites have always been recognized as essential in the past, and are held to be to-day a *sine qua non* of success. To be an operator, as that term is used at present, requires no special training, but a kind of innate shrewdness that deals continually with deception, and is a constant struggle to gain the advantage by appearing to be doing one thing while actually engaged in another—a systematic game of brag, a disregard of the interests of every one but self. The success of one is the result of long and patient labor—the success of the other is expected to reward the feverish activity of ten or a dozen years. The one tends to intellectual development, the other narrows and dwarfs the intellect. The one has rarely blunted moral rectitude, but, on the other hand, has strengthened the foundations of mercantile honor and honesty, while the other has developed a class of genteel criminals, who generally manage to escape punishment, and who look upon themselves as reputable members of the community. Option trading has the countenance of many worthy merchants, because by joining these gambling associations they have imagined they were keeping abreast of the times, but the evil tendency has been too clearly demonstrated within the past month, and if there is any value in these expensive lessons of experience, they ought to be heeded at once.—*N. Y. Shipping List.*

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, NOS. 116 & 118 GRAND AVENUE, MILWAUKEE.
SUBSCRIPTION PRICE—PER YEAR, IN ADVANCE.

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Bills for advertising will be sent monthly, unless otherwise agreed upon.
For estimates for advertising, address the UNITED STATES MILLER.

[Entered at the Post Office at Milwaukee, Wis., as second-class matter.]

MILWAUKEE, AUGUST, 1884.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

See Page 58.

F. E. CURTIS, Esq., the manufacturer of the Curtis-Helfrich grain cleaner, at Minneapolis, Minn., called on us July 18. He reports the prospects of the new grain-cleaner to be most excellent.

MESSRS. G. S. CRANSON & SON, of Silver Creek, N. Y., report the number of orders for buckwheat machines to be considerably greater than at this time last year, notwithstanding the prevailing dullness in nearly all lines of business.

MESSRS. HOWES & EWELL, of Silver Creek, N. Y., sent us a copy of their new catalogue, just issued. It is a model of typographical excellence in appearance, and is so arranged as to be of value to millers generally for reference. Mill owners should write for a copy at once.

MR. FRANK CLARK, formerly of Cawker City, but now of Bull City, Kas., made us a pleasant call July 17. Mr. Clark is an old Wisconsin man and takes great pleasure in revisiting Wisconsin occasionally. He is one of the early and prosperous settlers of Western Kansas.

WE are pained to record the death of William Lehman at Kansas City. He died after long suffering. Mr. Lehman was well known, either personally or by reputation, to almost every miller and mill furnisher in the country as the inventor of Lehman's millstone staff and method, and lastly by his disk machine, which he only perfected a short time previous to his death. Having lived in Milwaukee since 1876, he was well-known and respected by the trade here. We extend our heartfelt sympathies to his bereaved family, now residing in Kansas City.

IN a letter from the Geo. T. Smith Middlings Purifier Co., dated July 17, inviting the editor of this journal to be present on the occasion referred to, we find the following slip from a local paper:

"The excursion for the employes of the Geo. T. Smith Middlings Purifier Works will take place Saturday, July 26. There will be thirteen car loads—900 people—accompanied by the Geo. T. Smith band, leave at 6 o'clock in the morning via M. C. R. R. for Detroit. At Detroit the excursionists will take boat for St. Clair, proceeding to that place across Lake St. Clair, some 30 miles, and up the beautiful river of the same name, to the quaint old town. A committee will be sent on ahead to make all arrangements for the culinary and amusement department. It is safe to say that a treat is in store for those attending."

THE semi-annual statement of the Millers' National Insurance Company, 143 LaSalle street, Chicago, Ill., July 1, 1884, shows as follows:

ASSETS:

United States bonds, and stocks, market value.....	\$105,550.00
Cash on hand and in bank.....	22,776.89
Office furniture and fixtures.....	300.00
Deposit notes, subject to assessment.....	707,260.42

Total assets.....\$835,887.31

LIABILITIES.

Adjusted losses.....	None.
Losses unadjusted, awaiting proof, face of policies.....	\$20,000.00
Guarantee Deposit, to secure the payment of assessments.....	12,743.27

Total liabilities.....\$32,743.27

Surplus over all liabilities.....	\$803,144.04
Losses paid since January 1, 1884.....	64,496.18
Losses paid since organization.....	357,913.27

THERE has been a marked tendency during the past half year, among mill-furnishers and mill-builders to cut down the price of machinery, mill supplies and of mill building in general. In some cases jobs have been

taken for much less than the actual cost to the builder. This is not a sign of healthy business, nor can it be of benefit to any dealer or builder. "The laborer is worthy of his hire." A good machine is generally worth the price asked for it by the manufacturers. Millers who succeed in getting extraordinary low figures on work may certainly expect to find it of poor quality when they get it. Adulteration in all manner of substances has been the result of the demand of the purchaser for the article required for less than its actual value. That "the best is the cheapest," is an old saying, but it is nevertheless true.

THE GEO. T. SMITH MIDDLINGS PURIFIER CO.

There is perhaps no more complete manufacturing establishment for making special machinery than that owned by the Geo. T. SMITH MIDDLINGS PURIFIER CO., of Jackson, Mich., the special machines made by them being the widely known Smith Middlings Purifier and the Centrifugal Reel. The Smith Co. is capable of taking the raw materials and turning out complete machines without the aid or assistance of any other establishment.

The Smith works, like many other great manufacturing establishments, started from small beginnings. In 1877, they sold 120 machines; in 1878, 300; 600 in 1879, and in 1880, one thousand, and in 1881 the sales reached 1,800 machines, and in 1882 the sales were 3,200 machines, and in 1883 a slightly greater number.

Notwithstanding the fact that the milling business has been unusually dull during the greater part of the present year, we are reliably informed that the sales have largely increased in number up to the present time as compared to sales during same months last year.

There are two special reasons why the sales have been large. First, all machines are constructed of the best quality of material and with the most excellent workmanship; and, second, the great number of patents owned by the Company, which makes it as near safe to buy a machine of them as such things very well can be. When a patent was recently brought out that foreboded some danger to millers the Smith Co. immediately filed a bond with the Secretary of the Millers' National Association, in the sum of \$50,000, signed by three of the wealthiest citizens of Jackson, pledging themselves to protect their customers from all annoyance from patent suits. Such action as this makes the Company very popular with millers everywhere.

The works of the Smith Co. have been described during the present year in nearly every milling journal in the world. They are, however, continually making improvements, the most notable so far during the present year being the addition of a large new building and a 350-horse-power Reynolds-Corliss engine.

The Smith Co. have always treated their employes with great liberality, not only paying them first-class wages but occasionally showing them other courtesies of a marked nature, for instance, the annual excursions, one of which took place June 26. These courtesies are not misplaced, for it makes the employe feel as if he was appreciated by the firm, and he is not only willing to work his allotted hours, but if his skill or genius can be made of especial service he will not hesitate to give his employer the benefit of it. The liberal treatment of sick or disabled employes by the firm is well-known and deserving of the highest commendation. We cordially wish the Smith Co. unlimited success.

GOV. WASHBURN'S WILL.

THE TERMS OF THE WILL, WHICH HAS BEEN DECIDED VALID IN TWO STATES.

C. C. Washburn devises to his wife what moneys may be necessary for her support, placing no limit upon the amount. To his daughter, Jeannette, \$7,000 annually, out of a trust fund, and the same amount to his daughter Fannie; \$10,000 annually for five years after his decease to said daughters by the executors; annual payments to be made by the executors as follows: To his brother Israel, \$2,000; his daughter Ada, \$1,000; his daughter Mand, the same; the wife of his son Henry, the same; Adele, wife of Elihu B. Washburn, the same; testator's sister, Mrs. Martha B. Stephenson, \$2,000; and to her daughter Elizabeth and daughter Martha, \$1,000 each; to the wife of testator's brother Charles, \$2,000; her daughter Hester, \$500; daughter Lillian, the same; son Thurlow, the same; to testator's brother Samuel, \$2,000; to Mrs. Buffum, \$2,000; Ada Buffum, \$1,000; Frank Buffum, the same; Charles Buffum, the same; Caroline A. Holmes, \$2,000; Fanny Holmes, \$1,000; Cadwallader L. Washburn, the same. These payments are to cease after the end of the fifth year. Then follow a number of small bequests to members of the family. He bequeathes \$375,000 to an orphan asylum near Minneapolis; \$50,000 to the pub-

lic library in the city of La Crosse; \$50,000 in trust for Samuel H. Nevins, of La Crosse. The executors are authorized to convey the Minneapolis Mill A, if it has not been placed in corporation as intended, to the Fidelity Insurance, Trust and Safe Deposit Company, of Philadelphia, in trust for the benefit of his daughters, Jeannette and Fanny, a certain allowance from the earnings to be made annually to them. The executors are authorized to make the same disposition of mills B and C for the purpose of making good any deficiency in the bequest for the above mentioned orphan asylum and public library, the trust fund to be held for the general benefit of the estate and of the residuary legatees mentioned. The same provisions are made with reference to the Black River lands as those in reference to the mills. If the mills, lands and sawmill are put into corporations, then out of the Minneapolis mill stock, four-sevenths is to be put in trust for the benefit of the estate heretofore mentioned. A certain portion of the land and sawmill stock is to be placed in trust for the same purpose. The residuary property to which the residuary legatees are entitled, is divided into two equal parts, one part being bequeathed to the daughters and the other to brothers and sisters and their children. The value of the Minnesota property bequeathed is estimated at \$700,000.

COMPETITION OF MARKETS.

Markets that are common to various points of production or supply, control the rates from all these points by the competition which may exist with any one of them. The lowest rate to the market by any route controls the rates by all the other routes. This principle is well shown in the statement of the manager of the Great Western Railway of England.

"It will fairly illustrate to you," he says, "the practice with regard to some of the grain imported into this country, if I explain the position of Birmingham and South Staffordshire, which is a comparatively small district of about twelve miles square, and contains a population of upward of 1,000,000 persons, and therefore consumes large quantities of foreign as well as home-grown grain, etc.

"This district can be and is supplied from Liverpool, a distance of 98 miles; Gloucester, 53 miles; Bristol, 90 miles; Newport, 98 miles; and Cardiff, 110 miles (taking Birmingham as the place to measure to.) It will be seen that Gloucester is the nearest point, and as it is connected with Birmingham and South Staffordshire by river and canal navigation, as well as by railway, the cost of conveyance of American grain is cheapest from that place, and therefore the rates from Bristol, Liverpool, Cardiff and Newport have to be fixed so as to enable these points to compete with Gloucester."

The cost of American grain is probably the same at each of these various points which may supply the market; so that the route having the longest haul can charge no more than the one having the shortest. Though they are not parallel lines, yet as they go to the same market they come directly in competition with one another.

The same rule aids in determining the rates on grain and provisions from various producing points in America to the seaboard, and the ocean rate from there to England. "The United Kingdom," we are told, "is the chief grain market of the world. All the Indian corn and about 50 per cent. of the wheat consumed in that Kingdom is from foreign countries." In this market the chief competitors of the United States are Russia, Germany, Egypt, Australia, Canada and India. From the fields of production in the United States, then, the rates are controlled by competition with the different routes to the various countries mentioned. The rate from Odessa, on the Black Sea, to Liverpool affects the rate by sea from California, as well as by rail from Dakota.

Now, if the cost of production in Dakota were the same as in Germany, for instance, and the supply in either case were sufficient to meet the demand of Great Britain, the rate from Dakota to Liverpool would be the same as the rate from the place of production in Germany to Liverpool. If it were not as low, Dakota would send no grain to that market. If, however, as is the case, the cost of production in Dakota were less than in Germany, the rate from the former place would be such as to equalize the cost of the production in the market. Now, transportation is a part of the cost of production in the market. In the place where grain or any other raw material is produced, transportation is, of course, no direct element in its cost. But at the place of production it is worthless; it must be brought to market. That, from necessity, involves an additional expense, and this additional expense is a part of the cost of production in the market. This fact suggests the importance and power of the markets in regulating the rates of

transportation. This cost of production, other things being equal, determines who shall sell, and in what quantities. The selling price of a commodity is there determined by the competition of all sources of supply which the market has. These may be so close at hand that the transportation is an unimportant item; or may be in the place itself, in which case the transportation is no factor. To meet such competition the transportation company is compelled to fix its rates so low that the articles produced at a distance can be brought to the market at a profit to the producer.

This force of competition enters into the determination of the rates on nearly all commodities, and in nearly all places. It operates most powerfully upon those things which are consumed in the largest quantities, since for these there is the greatest demand and the greatest competition in their sale. It tends to reduce to a minimum the rates on grain, provisions and coal, and affects least the rates on silks, broadcloth and wines. It results in differential rates, which, while they cause complaint from some, are a source of the greatest benefit to the many. It produces competition between places where otherwise none exists; brings competition to commodities which before were monopolies. And so, in its effect, by constantly tending to reduce the selling price, it restricts profits more and more, and brings into stronger play the forces determining the cost of production. Hence result an action and reaction which continually tend to reduce the price of commodities to consumers.—Gerrit L. Lansing in *North American Review*.

THE FUTURE OF WHEAT RAISING.

There is in the attempts of England to secure a safe road to the heart of Africa something suggestive of new competition which American farmers will, within a few years, have to meet in the grain markets of the Old World. A few years ago it was thought that India could not produce enough wheat to seriously affect prices in America. Very few people now hold such an opinion, in face of the fact that, with a crop of 85,000,000 of bushels short, the price of wheat sank 18 cents below that of the time when our wheat crop was the largest ever known. This decline indicates that the American farmer cannot profitably compete with the fellahs of Egypt and the ryots of India; how, then, will it be when England shall have opened a safe and short road to the vast fertile districts in Central Africa described by Livingston and Stanley, where millions of natives, with a very crude system of husbandry obtain food in abundance? When England shall have assumed the power to "protect" the people of those regions as she will no doubt do, then her usual policy will be carried out, the natives will become practically slaves, and will be "encouraged" to produce great quantities of grain to exchange for English rum and calico.

No white man knows the extent to which Africa can be made to contribute to the supply of food for the civilized world, but it is safe to say that the next quarter of a century will do much to open the eyes of the world upon this point. That the result will be pleasing to the grower of wheat on this continent may well be doubted. If, with the lesson taught by the East Indian record, the American farmer cannot see coming events clear enough to lead him to adopt methods of farming which will make him comparatively independent of the world's wheat market the fault will be his own. That the time has come when he should decide is shown by the fact that in 1879 but 2,000,000 bushels of wheat were exported by British India; in 1883 those exports were 36,000,000 bushels, or just the quantity of the present deficit in American exports of last year's surplus of wheat. "The East Indian wheat area," says a recent writer, "is now 20,000,000 acres; and it is said that 56,000,000 acres of jungle, which, when cleared and cultivated, will make good wheat land, remain to be appropriated. The Home Government is prosecuting improvements to develop this valuable domain, among them a new canal 502 miles long, which will irrigate 780,000 acres through 2,500 miles of minor channels. Projected railway extensions also have the same end in view; and the second Suez Canal, for which concessions have been granted, only awaits the end of the war in the Soudan for its inauguration." By improved machinery with which to cultivate the ground and reduce the cost of harvesting the grain much may be done. It is a reproach to American inventive genius and American manufacturing enterprise that the single plow, or at best but two or three plows can be successfully used in preparing the ground, and that we are still dependent upon the muscular and very costly force of the horse for motive power in most farm operations, especially in preparing the ground for crops. It is a reproach to the whole people that, through the want of good highways, and of proper control of the railway systems of this country, the cost of putting the produce of our fields into market

should be so great. England manages to bring the cheap labor of the native of Africa and of India into direct competition with the inventive ability and manufacturing skill of America; and America seems to have got the worst of it in the trial. She is handicapped by the enormous burden of taxation imposed by transportation companies which, while they reap great profits, defy control.

But improved means for wresting from the earth her bountiful gifts will not long enable the American farmer to hold his place in the grain markets of the world. They will only serve to help him exhaust more quickly the account placed to his credit by Nature—an account against which he constantly draws and to which he adds little. The end of this reckless way of acting must come, for the account will soon be exhausted. In some of the Eastern and Southern States the account was long ago overdrawn; but the West gives no heed to the lessons taught by the experience of the East.—*Chicago Tribune*.

ENGLISH MILLING STATISTICS.

According to the last census the population of England and Wales numbered 25,974,439, in 1881, against 22,712,266, in 1871. During the last ten years the number of the agricultural population decreased by 273,954, while the manufacturing population increased by 1,235,642. The number of millers decreased from 29,720 in 1871, to 23,162 in 1881, while the number of grain and flour dealers was, during the same time, reduced from 11,964 to 8,180. On the other hand, the lists of bakers increased during the ten years from 52,733 to 71,032, and that of the confectioners from 9,337 to 12,483. Millwrights, who numbered 7,583 in 1871, are represented by only 6,940 in 1881. The number of foreigners employed in England in this branch of industry is remarkably small, only two in 1871, and only one in 1881. In the other branches we find only 13 foreign millers and 55 foreign grain and flour merchants in 1881, against six millers and 43 grain dealers in 1871. Among the bakers the foreign element is better represented. In 1871 there were 1,370 foreign bakers employed in England, and this number rose to 2,143 in 1881; more than 90 per cent. of the foreign bakers are Germans.

Among London's population in 1881, of 3,816,482, were 419 millwrights, 777 millers, and 2,014 flour and grain dealers. In 1871, with a population of 3,254,310, London held 456 millwrights and 940 millers. Whether this general decrease in the number of men employed in the milling industry and its collateral branches throughout England is due to improved machinery or other causes, cannot be determined from the simple figures which are so far available. The probabilities, however, are that much of it is due to improved machinery and improved methods, for we find a like decrease in the number of persons employed in the milling industry of this country, during the decade from 1870 to 1880. In 1870 we had 22,573 mills which employed 58,448 hands and turned out \$444,985,143 worth of flour, while in 1880 we had 24,338 mills and produced \$505,185,712 worth of flour, with only 58,407 hands.—*Miller and Manufacturer*.

THE BECKER WHEAT BRUSH.

"No pent-up America contracts the trade in Becker wheat brushes," observed the president of the Eureka Mfg. Co., of Rock Falls, Ill., to a representative of the *Modern Miller* as the two stood looking on at the loading of one of the renowned cone-shaped machines, billed for a South American city. "This is our third foreign shipment this week. Monday we sent two combined smutters and brushes to Bavaria, and within the past month we have shipped machines to Buenos Ayres, Austria, and Germany.

"For what point in South America is this machine intended?"

"It goes to Quito, in Ecuador, and from there to some point above it in the Andes Mountains."

"What in the name of—comprehension do they want of a Becker brush ten or twelve thousand feet up in the Andes?"

"For the same purpose, I suppose, for which they are used at the base of the mountains or anywhere else—to clean wheat."

"You don't say so," said the scribe, with a twinge in his good ear.

"That is probably it."

"How are they going to get the thing up the mountains?"

"By pack mule transportation. The machine is packed in parts, each part being put up in a separate box. This is not the first machine we have sent to that region. We are having a good trade in South America. Come in and look at our order book."

The scribe followed the president into the office and received satisfactory proof of the truth of his assertions.

"You must not think," said Mr. Galt, because we do not boom our machines by pyrotechnical advertising, like some of our competitors, that we are not having a large home

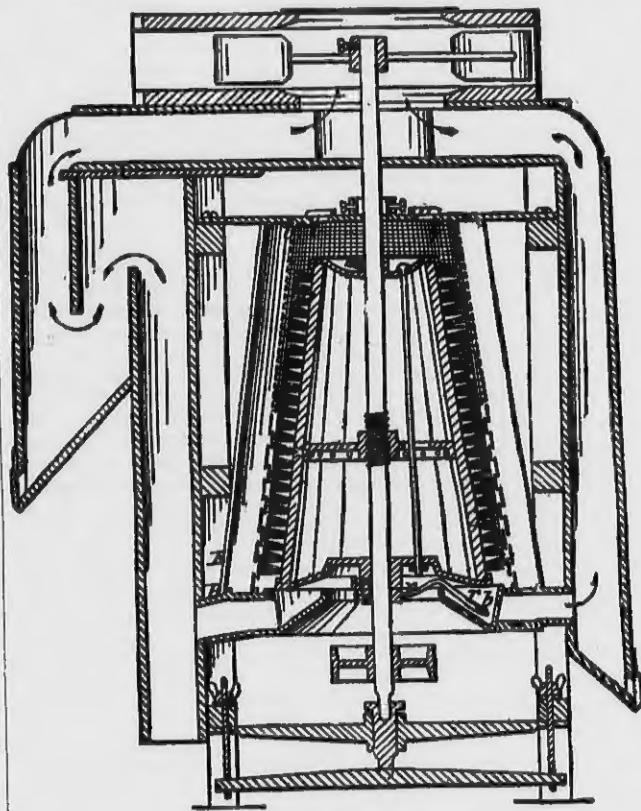
as well as foreign trade. We have probably done less newspaper advertising and had fewer traveling agents for the past five years than any other concern in our line. Yet we find our business steadily increasing. You see it doesn't take so much advertising to sell our machines as some others require. The Becker is the only practical cone-shaped brush in the market, and no miller who has a knowledge of machinery and the necessity of thorough wheat cleaning can fail to recognize the correctness of the principle upon which it works."

"What do you claim as the chief advantages of your machine over others?"

"That it has from two to four times more brush surface and will clean the wheat more thoroughly than any other machine made, while it requires less power to operate it. The bristles composing the brushes being longer, they will outwear those in any other machine. Some of our machines have been in use since 1873, and no new brushes or repairs for them have yet been called for."

"How are you doing with your combined brush and smutter?"

"Well. It is now in use in a large number of the best mills in the country, and is giving entire satisfaction. Just now we are receiving many orders from small millers, to whom this machine is particularly useful. It serves the purpose of two machines very well, and saves expense. By examining it you will see that it has large capacity. Our No. 2 will clean from 70 to 90 bushels of wheat per hour, and clean it well. The iron smutting surfaces of the cone alternate with the brushes, the latter occupying about two-thirds the entire surface. The scouring



THE BECKER WHEAT BRUSH.

case has alternate sections of steel wire and perforated metal. The ventilation is thorough, the fan at the top drawing a strong current of air through the machine, which carries off the dust and discharges it outside the building. Running our No. 2 at 450 revolutions, the wheat glides over the brush and scouring surfaces just fast enough to be well cleaned, and no faster."

"How many sizes do you make?"

"We manufacture six different sizes, the capacity of the smallest machine being from ten to fifteen bushels per hour. We warrant each to be well built and of the best material, and if after a trial of thirty days a machine does not do all we claim for it, the miller is at liberty to return it to us without cost to himself."

"How many workmen do you employ?"

"We manage to keep fifty men busy the year round."

The reporter took a stroll through the works and came away satisfied that the Eureka Manufacturing Co. was having its share of business.—*From The Modern Miller*.

NEWS.

BURNED.—Hamilton's Mill, at Paris, Tex.

Minneapolis, Minn., is to have glass works.

BURNED.—Wells & Cosgrove's Mill, at Belle Isle, Virginia.

The Galt Milling Co., at Galt, Ont., will rebuild their oatmeal mill.

BURNED.—July 9, Kirk & Barber's flour mill at Thornton, Ind.

The Rollins Middlings Purifier Co., is the name of a new mill-furnishing company at Minneapolis.

BURNED.—June 26, H. Geier & Co.'s Mill at Forestville, Door Co., Wis. Loss, \$15,000; no insurance.

The Planet Milling Co., with a capital of \$100,000 will carry on the milling business at Litchfield, Ill.

BURNED.—Beach's Mill, at West Winchester, Ont., July 13. Loss estimated at \$30,000, with no insurance.

Hurlbert & Goff will build a mill at Superior, Wis. The mill will start out with a capacity of 75 barrels.

The Case Mfg. Co., Columbus, O., have lately shipped Jos. Brudi & Co., New Haven, Ind., two pair rolls with patent automatic feed.

BURNED.—"The Old Red Mill", at Albany, N. Y., July 7. The mill was operated by A. McDonald, and owned by the Irwin estate. Loss about \$30,000.

Messrs. H. A. Hayden & Co., Jackson, Mich., have ordered a 20x42 Reynolds-Corlies engine of Edw. P. Allis & Co., of Milwaukee.

Messrs. Edw. P. Allis & Co. are building a new 16x42 Reynolds' patent automatic cut-off engine for the coming exposition at St. Louis, Mo.

BURNED.—July 5, the Newark Machine Co.'s Works at Newark, O. Loss, \$400,000; insurance, \$250,000. Three hundred men are thrown out of employment.

Messrs. Kindell & Stewart are putting in a new 12x36 Reynolds-Corlies engine, purchased from Edw. P. Allis & Co., Milwaukee, in their factory at Denver, Colorado.

Goold Bros., of New Windsor, Ill., have lately removed their mill to Howard, Dak., and have ordered four additional pair of rolls from the Case Mfg. Co., Columbus, O.

The Richmond (Ind.) Machine Works, in process of building, consists of a machine shop, foundry, and blacksmith shop, and a wood-working department; it will be completed Sept. 1.

The manufacturers of milling machinery at Jackson, Mich., all report trade good and are running on full time. They anticipate a lively trade during the coming fall and winter.

The Case Manufacturing Company, Columbus, O., have lately furnished Butler & Brenner, Wheatland, Ind., with two pair rolls and one No. 1 double purifier, all to have patent automatic feed.

Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have orders for a three million and also a million and a half gallons pumping engine for the city of St. Paul, Minn., and the work is well under way. The engines will be Reynolds' compound condensing engines and will be set up ready for work by Oct. 15, 1884.

The Westinghouse automatic engine is rapidly coming into favor with millers. Within the last few days orders have been received from C. Arnold & Co., Sterling, Kansas; Alexander Wilson, Clarke, Dak.; R. C. Grisham & Co., Coffeetown, Kansas; J. C. Dunwoody, Lamar, Mo.; Smith & Wilkinson, Blacks' Station, S. C.; besides a number from the smaller mills in the South.

Messrs. Fairbanks, Morse & Co., of Chicago, have contracted with the Westinghouse Machine Company of Pittsburgh, Pa., to control the entire sale of the Westinghouse Automatic Engine, in the western states and the territories for a term of years. This contract, which is exclusive, took effect July 1st, and being closed only after a thorough investigation as to relative merit, becomes a very practical endorsement of the engine in question.

The British and Irish Millers' Association held their convention at Stockton-on-Tees, June 24, 25 and 26. About 200 millers were present. Several interesting papers were read. Visits were made to some local mills, and some delightful excursions by steam and rail were made. Every one appears to have been well pleased.

The Northwestern Miller says: The monument committee of the Head Millers' Association has arranged with a Maine firm to get up the design of a monument to cost \$3,500. It is to be 18 feet high and 7 feet square at the base. The shaft above the base is to be square, surmounted by a cross. On one of the base panels will be an inscription, on the second a broken gear, on the third a millstone, and on the fourth a sheaf of wheat. Drawings of this design will be ready for submission to the association in about two weeks. Other parties are also to be conferred with for the purpose of getting designs and prices.

The Case Manufacturing Company, in sending their counter-blast against the Smith Purifier Co., which is found on another page in this paper, take occasion to inform us that the fine wheat harvest has already made an influx on many others. They state they are running full blast and that their business was never in more healthy condition, barring the usual tardiness in collections. Millers that would have done nothing this year, now that the harvest promises so well, are in big hurry to get in new machinery ready for the new wheat.

The Case Manufacturing Company, Columbus, O., have received the following orders during the past month: From Wm. Peter, Columbiaville, Mich., for four pair rolls with patent automatic feed, three improved Case centrifugal reels, and other machinery. From J. C. Cranshaw, Charleston, Mo., for one "Little Giant" break machine and scalper, making three separations. From J. B. Miller & Co., Ashley, O., for one additional pair of rolls. Through the Richmond City Mill Works, Richmond, Ind., one "Little Giant" break machine, for Samuel McCray, Clinton Valley, Ohio. From A. J. & F. E. Davis, Shafsbury, Mich., for rolls and other machinery. From Simmons & Sewell, Virden, Ill., for two pair rolls with patent automatic feed. From A. H. Coppack, Pleasant Hill, Ohio, for two pair rolls with patent automatic feed. From E. S. Taey, Golconda, Ill., for two pair of rolls with automatic feed. From J. K. Mullen & Co., Denver, Col., for two additional No. 1 double purifiers. From Geo. Graham, Trenton, Mo., for two pair rolls with automatic feed.

The Jackson (Mich.) Daily Citizen, of July 5th, contained the following notice, which speaks highly for the liberality and patriotism of the Geo. T. Smith Middlings Purifier Co.: The display of the George T. Smith Middlings Purifier Works in the parade yesterday, was warmly commented on. Mr. Geo. T. Smith and Geo. S. Bennett rode at the head of their division of the procession, and they would have been proud if they could have heard the warm comments of approval. The public hardly realized the magnitude of the concern until they saw yesterday's demonstration. The great trucks with the purifiers, the cornet band composed of employees of the establishment, and the men in line from that factory numbered 350.

The exhibit of the vastness of this enterprise shows its greatness. It will be remembered that nearly as large a factory of the company is located at Stratford, Ont. The company eminently deserves its prosperity. Mr. Geo. T. Smith, whose genius and enterprise laid the foundation of this great business, with his able associates, have built up a trade which reaches nearly all portions of the world. This business has hardly started, and will each year grow larger.

A terrific boiler explosion occurred June 27, at Stryker, O., in the flour mill operated by Brownell & Haefer. About forty men were employed in the mill at the time, and the explosion was so terrible in its force that the large structure was blown almost to atoms, and among its debris were buried twenty-seven of the employees, eleven of whom were extricated in a dying condition. Edward Foster, E. R. Ayres, James Tasher, J. H. Brennan, James Stull, W. Roop and Frank Douglas, killed; J. Ramsey, John Weller and Michael Cooney, mortally wounded. Besides these about eight others were seriously injured, while nearly every person in the mill was more or less hurt. The force of the explosion was so great that pieces of the boiler, machinery and stones from the wall were hurled through the air a distance of a quarter of a mile. One piece of the boiler, about three feet square and weighing probably more than a hundred pounds, was sent flying through the roof of a house at that distance from the mill. It took nearly the whole roof off, and the falling timbers seriously injured Miss Nellie Winters and George Winters, two of its occupants. The cause of the explosion is not known. Ed. Foster, the engineer, was thrown nearly three hundred feet. He was terribly scalded and mangled but lived for three hours. E. R. Ayers, his assistant, was hurled through the roof, 300 feet away.

The following orders were received by Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, for their celebrated roller mills, during the past month: Benj. Charles, Clear Springs, Md., a No. 2 four-break reduction machine and four pair Allis rolls in Gray's noiseless belt frames. The Hudnuta, Pekin, Ill., a Gray's noiseless belt roller mill. Messrs. Packard & Foote, Middleton, Idaho, three pair Allis rolls in Gray's noiseless belt frames, and other special machinery, etc. M. Joplin, Longwood, Mo., a Gray's noiseless belt roller mill. Through Wolf & Hamaker, Allentown, Pa.: Ten pair Allis rolls in Gray's noiseless belt frames, for J. H. Snyder, Hanover; eight pair Allis porcelain rolls in Gray's noiseless belt roller frames, for E. K. Fried & Co., North Wales, Pa. Meyer, Luebbert & Co., Holland, Md., a Gray's noiseless belt roller mill. Stanton, Stoner & Co., Painterville, Pa., ten pair Allis rolls in Gray's noiseless belt frames, also bolting and scalping chests, and machinery necessary to remodel their mill to the roller system. Acme Milling Co., Olean, N. Y., two pair porcelain rolls in Gray's noiseless belt frames. Through Milford & Northway, Minneapolis: A Gray's noiseless belt roller mill, for S. Nelson, Vasa, Minn.; four pair Allis rolls in Gray's noiseless belt frames, for McMillan & Martins, West Salem, Wis. Geo. Franger, Pleasant Unity, Pa., a No. 2 four-break reduction machine and four pair Allis rolls in Gray's noiseless belt frames. Oscar Stevens, Clear Lake, Iowa, six pair Allis rolls in Gray's noiseless belt frames. A. Phelps, Delavan, Wis., a Gray's noiseless belt roller mill. Topeka Mill and Elevator, Topeka, Kans., six pair Allis rolls in Gray's noiseless belt frames and the necessary bolts and machinery for a complete corn meal mill. Through Richmond City Mill Works, Richmond: Twelve pair Allis rolls in Gray's noiseless belt frames, for J. W. Zaring, Shelbyville, Ky.; eight pair Allis rolls in Gray's noiseless belt frames, for a job they have at Hiawatha, Kas. W. A. Gaines & Co., Frankfort, Ky., four pair Allis rolls in Gray's noiseless belt frames. Messrs. Hacke & Seville, Lodi, Wis., a Gray's noiseless belt roller mill. The Keystone Iron Works Co., Kansas City, Mo., a Gray's noiseless belt roller mill. Henry Kritzer, Newaway, Mich., eight pair Allis rolls in Gray's noiseless belt frames, and other machinery necessary to fit up his mill in good shape. E. Cutler, Ridgeway, Ont., a No. 2 four-break reduction machine, Gray's noiseless belt roller mill, and complete outfit. Through Bradford Mills Co., Cincinnati, O.: Six pair Allis rolls in Gray's noiseless belt frames, for Wilson & Beardsley, Huntington, W. Va.; a Gray's noiseless belt roller mill for J. A. Humphrey & Son, Charleston, W. Va. W. Pollock & Co., Mexico, Mo., six pair Allis rolls in Gray's noiseless belt frames. Frank Bilenitz, Norman, Wis., a porcelain roller mill in Gray's frame. Loughny Bros., Monticello, Ind., a Gray's noiseless belt roller mill. H. Resener & Co., Cheshire, Ohio, eight pairs Allis rolls in Gray's noiseless belt frames, with necessary machinery for a complete outfit. Through the Great Western Manufacturing Co., Kansas City: A Gray's noiseless belt roller mill for J. C. Mohrman & Co., Syracuse, Neb. Through Ypsilanti Machine Works, Mich.: Eight pair Allis rolls in Gray's noiseless belt frames, for L. M. Marshall, Perry, Mich. Through Bass, Fdy. and Machine Works, Ft. Wayne, Ind.: A Gray's noiseless belt roller mill, for C. R. Cooley & Son, Hartford City, Ind. Canon City Milling Co., Canon City, Colo., twelve pair Allis rolls in Gray's noiseless belt roller frames, with necessary machinery to make a complete outfit. Camp, Geiger & Beebe, Union City, Pa., a porcelain roller mill in Gray's noiseless belt frames. Middleport Flour Co., Middleport, Ohio, a Gray's noiseless belt roller mill. Webber & Sons, Florence, Neb., a No. 2 four-break reduction machine. Daisy Roller Mills, Milwaukee, a Gray's noiseless belt roller mill. Jas. Huxtable, Hornings Mills, Ont., ten pair Allis rolls in Gray's noiseless belt frames, and complete outfit for full roller mill. Stanford, Logan & Co., Black Earth, Wis., six pairs Allis rolls in Gray's noiseless belt frames, together with special machinery to refit the mill to the roller system. Through the Richmond City Mill Works: A Gray's noiseless belt roller mill, for Messrs. Logan & Logan, Shelbyville, Ky. Messrs. Chas. E. Hall & Co., Indianapolis, Ind., four pairs Allis rolls in Gray's noiseless belt frames. F. A. & L. K. Bean, Faribault, Minn., a Gray's noiseless belt roller mill. Messrs. Tunnel Bros. & Co., Big Stone City, D. T., seven pair Allis rolls in Gray's noiseless belt frames. Andrew Bowling, Staunton, Va., a Gray's noiseless belt roller mill. Chas. F. Neeson, Sedalia, Mo., six pair Allis rolls in Gray's noiseless belt frames. J. B. Stauffer & Co., Scottsdale, Pa., a Gray's noiseless belt roller mill. Schroeder & Trotman, Cedarburg, Wis., a Gray's noiseless belt roller mill. Through the Thayer Manufacturing Co., Westerville, O.: A Gray's noiseless belt roller mill, for Kambell & Sons, Greenfield, Mo. J. K. Mullen & Co., Denver, Colo., another Gray's noiseless belt roller mill.

UNITED STATES MILLER.

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ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for (\$10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,050 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and the capacity in barrels of flour per day. It further indicates cornmeal, buckwheat, rye-flour and rice mills. It shows that the number of mills in the various states and territories of the United States are as follows: Alabama 453; Arizona 17; Arkansas 343; California 222; Colorado 54; Connecticut 288; Dakota 81; Delaware 98; District of Columbia 5; Florida 66; Georgia 631; Idaho 21; Illinois 1123; Indiana 1089; Indian Territory 14; Iowa 790; Kansas 489; Kentucky 713; Louisiana 61; Maine 280; Maryland 353; Massachusetts 340; Michigan 846; Minnesota 487; Mississippi 380; Missouri 1025; Montana 21; Nebraska 250; Nevada 13; New Hampshire 182; New Jersey 442; New Mexico 82; New York 1002; North Carolina 848; Ohio 1449; Oregon 145; Pennsylvania 3142; Rhode Island 51; South Carolina 274; Tennessee 801; Texas 706; Utah 110; Vermont 247; Virginia 781; Washington Territory 61; West Virginia 447; Wisconsin 777; Wyoming 2.

In the Dominion of Canada we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 102; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,050.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

THE failure of Dawson Bros., of Wilmington, Del., has been announced. It appears to be a bad failure and is said to be the result of taking contracts too cheap.

MESSRS. MAHER & ECKSTEIN will soon publish a Gazetteer of all the towns and cities located on the Wisconsin Central Line, from Milwaukee to St. Paul, and Portage to Ashland, which will give in detail the history, industry and products of each town on the route, and in addition will contain a directory of the leading business men. The work will be issued under the supervision of the General Passenger Department of the Wisconsin Central Railway, and will be distributed as a souvenir, free of charge, upon the opening of the new line from Milwaukee to St. Paul. The publication will be a model one in every respect, and will be beautifully illustrated with new cuts and abound in pleasing descriptive matter. The value of such a work to advertisers will certainly be great and we trust Milwaukee business men will not be slow to take advantage of it.

GRAHAM AND WHITE FLOUR.

It is doubtless well known to most people that the manufacture of flour has undergone a complete revolution within ten years. To-day, instead of the old millstone, rollers made of steel or chilled iron are used, and the wheat is reduced to flour by several successive breaks. By this method nothing goes into the flour-barrel but pure flour.

Those who recommend Graham flour do so under the mistaken notion that there is some nutriment in the bran. There is no more nutriment in it than in a piece of flint, as it is nothing but pure silex. It is absurd to call whole meal Graham flour, and the gentleman after whom it was called did not recommend its use as food except in certain cases. On page 55 of Dr. Graham's book, he says:

"Coarse wheaten bread may do very well

for those who are troubled with constipation by mechanically irritating and exciting the stomach and bowels. Yet, for that reason, it is wholly unfit and improper for those who are afflicted with chronic diarrhoea. Another objection is that, although bran may serve, like other mechanical excitants, for a while to relieve constipation, yet it soon wears out the excitability of the organs and leaves them more inactive than before."

What do Graham's disciples say to this? Several other passages of Dr. Graham's works could be quoted to show that whole-wheat flour is not only unhealthful as an everyday food, but that in a short time it destroys the coating of the stomach.

Let us see what science teaches about Graham flour. Take a grain of wheat, view it through a microscope, and what do you see? A rough, bristling structure as shaggy as the bark of an old oak, much dust and dirt, many insects' eggs stored away in the crevices, and shaggy hairs on one end that hold in their embrace any quantity of dirt. You feel certain that these substances could not be designed for human food, and you know that they are not food. Chemistry indicates nothing nutritive in these shells, and even the flavor of the grain is absent. You put some of the bran in your mouth, and the particles of glass—for that is what they are—burrow into the membranes, and irritate and inflame them so much that you are convinced that they are not good for food. If every atom of inert matter could be eliminated from substances swallowed, indigestion would be unknown; the great object in eating is to take food and nothing else. Harsh substances cannot be mixed with food without a serious loss of the food portion which passes through the alimentary canal unassimilated by reason of its base association.

Exhaustive tests have proved that not less than one-half of the real food contained in Graham meal passes unchanged. The bran is wonderfully potent as an irritant, and its action in the stomach is that of a cathartic. Catharsis is depletion; and habitual depletion should, of course, be avoided. It will always be induced by substances which cannot be emulsified, and without emulsification assimilation is impossible. The habitual employment of substances which cannot be reduced to a pulp is to lessen the stomachic and intestinal energy, and as no human stomach can emulsify wheat-hulls or bran, it follows that they should not be sent there. They could not be boiled to a pulp in water in a century, and can only be dissolved by a caustic alkali or mineral acid.

Examine the substance voided from cattle that have swallowed these hulls. They will be found unchanged. Their needle-like points are not even blunted. Nor are their serrated edges dulled. This is why they are removed from the flour. The same reason induces us to remove the skin from the banana and the potato or apple. They have no value or solubility. Let the dyspeptic give up his pills and his bran food and take healthy food and exercise and he will soon recover. When a person commences on a bran food, a little is sufficient; but after a time the dose must be increased making the drain on the system enormous. The fluid poured into the alimentary canal to protect it against the blistering effect of the scratching power of the irritant must inevitably sap the vital powers. Besides this, the important part of the digestive process performed in the stomach is not perfect in consequence of the excess of harsh material: the sensitive stomach declines to contract upon and agitate a mass of food which bristles with thorny points. It may attempt it, but it will no more continue to discharge that important function with energy than one would consent to close his hand a second time upon a cushion of concealed needles.

Another reason why bran is not healthy is because it contains cerealine; which was discovered by Mège Mouriés, by whom it was shown that the good or bad color, the fineness of texture, or even the flavor of bread depended on the absence or presence of cerealine in the flour. The most noxious cerealine is contained in the cells of the innermost membrane of the bran, and its dark or black character is rendered apparent by mixing bran with flour. The result in baking is not what might be expected, white bread with flakes of bran in it, but a distinctly brown loaf. The best, the whitest, and most nutritious flour contains no cerealine, and consequently no bran.

What Dr. Graham meant was, as it was almost impossible to retain all the mineral vital elements and phosphates in the flour by modes of milling in vogue in his time, that it would be better to use the meal with the bran in it than to lose the phosphates. But there have been great strides both in milling and chemistry since his day, and it is known beyond any doubt, that what is gained by having all the phosphates introduced with the bran is trebly lost in consequence of the positive disadvantage of the bran not allowing the food to re-

main long enough in the stomach for its nourishing properties to be duly absorbed and assimilated.—J. D. Nolan, in the N. Y. Sun.

SOUTHERN PROGRESS UNDER THE TARIFF.

TWO VOICES FROM SOUTHERN STATES.

(By John W. Hinton, of Milwaukee.)

Conversing with the president of a western college that does not teach Free Trade, the writer was told that the president, when in England during the previous summer, was introduced to John Bright, who at once railed against the evils of the American Tariff. "Do you observe," asked the president, "how manufactures are being developed in the Southern States?" Mr. Bright replied, "yes, but New England will soon destroy those." "Oh no," rejoined the American, "she won't; because she furnished the capital with which they have been developed." "Ah!" said Mr. Bright, and all further conversation ceased. The next day, while the college president was passing through the members' lobby of the House of Commons, Mr. Bright extended his hand very cordially and said: "That was a very strong point you made yesterday, a very strong one."

The development of the South, within the past five years, has been marvelous, and their wise men realize the true cause of its prosperity. Read the following from the *Hot Blast*, published at Anniston, Alabama:

WHY WE WERE POOR.

We often hear our Southern people talking about the immense fortunes that were swept away from them by the war. This is especially the case with some of the younger people, who, recollecting the number of negroes their parents owned, take that as a basis of what would have been their wealth if the negroes had not been emancipated. It is a pleasant recollection, and we do not care to rudely destroy this fabric of their pleasant memories of the "good times before the war," but it is necessary for us to do so that we may see how we stand to-day. The South was not rich before the war. It is a fact that in nearly every Southern State stay laws were in operation when the war began. Our people were heavily in debt, and it was the exception that found a farmer whose negroes and lands were not encumbered. So universally was this the case that in Georgia, in 1858, a state law was passed, staying the collection of debts. Why was this so? It was because we were purely an agricultural community; we had no manufacturing in the South of any note, but depended on the North and Europe for everything we used, even to a great many things we consumed on our tables. Certainly, we pursued agriculture under the most favorable auspices. We had the best labor in the world, at the very smallest cost. We had the entire control over an able-bodied man's labor and locomotion, for the small sum of a peck of meal, three and a half pounds of bacon and a plug of tobacco per week, and two hats, and two pairs of brogans and two suits of cotton clothing a year. Surely the labor was cheap enough, and yet we did not make any money in farming; if so, why these stay laws, and why was the country in debt? Our northern friends were all this time accumulating vast sums of money by manufacturing goods and selling them to us. They were growing rich under the beneficent operation of a wise protective tariff. Now that the South has gotten into a position to reap like benefits from a tariff, is it wise for us to even agitate the return to free trade? Are we not wise enough to see what protection has done for the industries of the North? And now that like industries are springing up all over the South, that can manufacture under even more favorable auspices than did the North before the war, would it not be worse than suicide for us to talk about free trade? It does seem as though we ought to learn something from our experience, and from what we see the North has actually accomplished. The vaults of the northern banks are loaded with gold and silver, as the South's will be, if the mischievous free trade dreamers will let us alone.

Fully \$57,000,000 have been sent to the South since January 1, 1884. Mr. Harry M. Hill, at Jackson, Tennessee, in May last, said:

In the year 1870 we find that the state of Alabama with a population of 996,992 against 1,203,000 in 1880; Arkansas with 482,000 against 802,000; Mississippi with 827,000 against 1,131,000; Tennessee with 1,238,000 against 1,542,000. The increase in all the other Southern States is in keeping with the above. Texas, like Arkansas, has almost doubled her population, having increased in the same length of time from 818,000 to 1,591,000. The increase in all the Southern States since 1865, has reached the enormous figure of over five millions of souls.

Mr. Hill continues:

Being an agricultural people the South contented herself with this pursuit; to her manufacturing was unknown. With the aid of free labor she could raise and ship her raw material and pay the cost. Upon the other hand New England, which held the monopoly of the cotton mills, cared nothing for the freights in getting the raw material to her doors, but time and experience has developed the fact that greater profits can be made by planting the factories, as it were, in the fields.

WHERE THE STAPLE IS GROWN.

And as a result of this discovery, we have to-day, south of Mason and Dixon's line, 364 cotton mills, the annual product of which has reached the marvelous sum of \$40,000,000.

Over \$25,000,000 of this income has been spent in the North for machinery alone. It is gratifying, however, to be able to announce that at Memphis, Atlanta, Chattanooga, and at other southern points, this heavy machinery is now being made.

As an evidence of the success attending cotton manufacture in the south, I refer you to the Eagle and Phoenix Mills of Columbus, Ga. This mill has a capital stock of \$1,250,000, and notwithstanding the extraordinary expenses it has incurred of late and the terrible depression in cotton goods within the last year, it has cleared and paid a cash dividend of 8 per cent. It was organized in 1867, has built improvements costing over \$1,000,000, paid out in cash dividends \$1,970,000, and strange as it may seem, has on hand

to-day a large surplus in its treasury. In fact, it is said to be the largest cotton mill in the United States.

PROGRESS OF THE LAST THREE YEARS.

The value of cotton manufactured at the South in 1880 was only \$21,000,000, yet we find in 1883 the value ranging between \$36,000,000 and \$40,000,000.

In addition to this immense amount of capital thus invested, a fabulous amount has found its way into the manufacture of cottonseed oil and meal—a product unknown and considered worthless in ante bellum days.

And while we have made these great changes in our manufacturing pursuits, we have not gone backward in our agricultural pursuits. The yield of cotton, hogs and hominy has gone steadily forward.

In the States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Tennessee and Texas, in 1879, there were in operation 11,604 miles of railway. We have now in the same States, running at a fair profit, 17,891 miles, showing the enormous increase in the brief space of four years, of 6,287 miles.

Along the lines of these great railways towns and cities have sprung up as by enchantment. The traveler is struck with the change.

In the states of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Tennessee and Texas we find that the progress of these states for the past four years, by way of increase in value, is over \$500,000,000, and while it is not my purpose to go into the increase of the mineral products of the south, yet I beg leave to say that from 1879 to this period the output of Alabama alone has increased from

FOUR TO NINETEEN MILLIONS OF DOLLARS, and by way of an incidental touch upon the lumber products I would state that, within the same period of time, it has increased her yield over \$6,000,000.

The agricultural statistics show that the raw products raised in these eight states alone, including lumber, cotton and wool, have increased within the last four years \$587,000,000.

This progress has been steady, upward and onward, and naught but civil and suicidal legislation can arrest its progress. It will continue as irresistibly as the flow of our great Mississippi, that goes murmuring on to the sea. [Applause.]

We are approaching the very acme of our new prosperity, but we must not ascribe it to our energy and pluck alone—nor to foreign capital, which has found employment here—for in my humble judgment it is due in a great measure to our

WISE SYSTEM OF A PROTECTIVE TARIFF.

The cotton mills in the south gave the first impetus to all other factories and diversified pursuits, and each has prospered under a common shelter of our protective system. Under its beneficent effects all of our southern industries have sprung into life, and are to-day indebted to it for that marvelous success attending their career; and the late discussion of the subject has not been without serious results. The system of protection is not peculiarly our own; it is based upon the experience and wisdom of ages, and is at this hour the fixed law of the principal nations of the earth. We are told that the Philistines compelled the Jews to extinguish the fires of their forges so that they might not become independent. Aristophanes' play of the Archanians places Athens at the apex of her splendor and power when she became dictator of her own markets and protector of her home industries.

Augustus Caesar restored the protective policy after Rome had languished under the free trade fallacy; in fact this system prevails in all the Asiatic countries, and in Europe, France, Austria, Northern Germany, Switzerland and Spain, Russia and Italy. And while Great Britain has adopted the free trade policy, her colonies repudiate the idea and to-day are happy and prosperous behind their breastwork of protection.

England's commercial system is maintained by 42,000,000 of people, while the protective system stands upon the props of 340,000,000. And the great civil wars of the last century

WERE WAGED FOR COMMERCIAL SUPREMACY.

Several years ago the picture of distress pervading this land was painful to behold. The contraction of the currency and the work of monopolies, combined with a great public debt and other causes, filled our highways with starving tramps and brought poverty and distress to every class.

But to-day how different the scene. Look where you may over this broad southern land, and the eye rests upon a people fully employed, lands increasing in value, the arts flourishing, new towns, yea, new cities, springing up as by enchantment, new mines of iron and coal, and factories of every kind, all of which are connected by a cobweb of railway system and navigable streams, the face of the whole country presenting one broad smile of contentment and prosperity. Paralyze the

STRONG ARM OF PROTECTION

and I firmly believe the south would at once drift back to her state of inertness and poverty from which she has recently emerged. Open up competition with the bee hive of paupers of Europe, with our present labor now so profitably employed you not only work incalculable injury and misery, but you will destroy any party that would attempt it—so suicidal a measure.

James A. Garfield, when nominating John Sherman, in 1880, said of the Republican party:

"It threw its protecting arm around our great industries and they stood erect as with new life."

It is the "arm of protection" thrown around the South that gives it its "new life."

Thomas Hurlburt's flour mill at Watford, Wis., was damaged, July 24, by wind, to the amount of \$3,000.

Eminent lawyers have decided that the state and not the riparian owner has the title to the water power at Niagara Falls. We always supposed the hackmen owned that and everything else at the Falls.

John Webster, the veteran millwright and mill builder, of Detroit, Mich., has removed to Nos. 58 and 60 First street, where he has fine salesrooms and shop. Mr. Webster has been very busy all of the present year.

The failure of the Golden Age Flouring Mills, San Francisco, was announced July 2, with liabilities stated at \$75,000. A meeting of the creditors will be called to-day, when it will be decided whether or not there shall be an assignment. The mill has been run by a stock company, of which P. A. Campbell is President and George Schroeder, Secretary. The chief creditor is the French Bank, which loaned \$12,500 on a mortgage about one month ago. The other creditors are mercantile firms, who are in for sums under \$5,000.—*Alta Californian*.

ROLLER MILLING IN KENTUCKY.

WM. SHAW'S NEW MILL AT PARIS, KY.

A representative of the *Lexington (Ky.) Press* was recently detailed to go to Paris, Ky., to take a look through the mammoth roller flouring mills of Mr. William Shaw, one of the most celebrated millers in Kentucky. These mills are situated in the suburbs of Paris on a never-failing stream of water. The building is six stories high, and is one of the most substantial buildings in the state. Some of the stories are nineteen feet from the floor to the ceiling. The mill and its inside workings can be no more vividly pictured than in the graphic words of Mr. Shaw himself:

I come right to the front with one of the best mills in America, and decidedly the best in Kentucky. Now, that may seem a very bold assertion, and the general public will naturally say: "Come, Billy Shaw, we want facts to sustain the assertion." Very well, here they are:

The United States is, beyond question, the leading nation of the world in the manufacture of milling and agricultural machinery, especially so in mill machinery, and Minneapolis, the leading city in the United States, for magnificent mills and mill machinery, which the world cannot beat, and the lamented Gov. Washburn, now deceased, was the grand pioneer in developing and bringing to perfection this new process of gradual reduction by roller machinery. Messrs. Odell & McKean, connected with the celebrated manufacturers of milling and other machinery of the Stilwell & Bierce Mfg. Co., of Dayton, O., were, for many years, pioneers with Gov. Washburn in bringing to perfection this Hungarian process of milling, and as theoretic and practical workmen in construction of mills and milling machinery cannot be excelled. As proof, let me refer to the celebrity of the Odell roller machinery, which is gaining world-wide fame.

Only the past winter they shipped to Cork, Ireland, the Odell machinery for a 300-barrel mill for John Shaw & Son, and about the 1st of last February they sent a corps of workmen to erect this mill. Whilst I had been mill-stone milling some thirty years, at my late age of life (three score and ten), I hesitated a long while about making this great change, but finally decided I would. However, prior to doing so, I made a trip to Maysville to see an Odell roller mill just built by Messrs. Robinson & Co., and found it giving good satisfaction and running well. I then made a trip to Ohio to look at some of the best mills. I subsequently made another trip to Ohio, accompanied by Mr. M. A. Craft of Miami, Ohio, and we took in, on our trip, some of the very best mills in the State of Ohio, and got the views of the best millers and mill owners in the state in regard to the most popular and best roller machinery, and found the Odell Rolls the most popular, coinciding with our views. While many other makes of rolls are good, very good, yet the Odell rolls possess many advantages that others do not possess. So after traveling around among the millers and mill owners, I finally decided on the Odell roller system. I entered into a contract with the Stilwell & Bierce Mfg. Co., for two Victor turbine water wheels of 95-horse-power, and the Odell roller machinery for a 150-barrel-per-day mill. Then they furnished me with the following machinery from other parties: 2 6-reel bolting chests and 10 reel scalpers, from Lima, Ohio; 5 Geo. T. Smith's No. 1 purifiers, from Jackson, Michigan; 1 Becker Brush smutter, from Rock Falls, Ill.; 1 Beardsley scourer, from Milwaukee; 2 dust-collectors from Milwaukee; 1 bran duster from Lockport, N. Y.; 1 magnetic separator, from New York; 2 Eureka smutters from Silver Creek, N. Y.; 1 centrifugal reel from Dayton. All this machinery is first-class, and cannot be excelled. While there are mills in Minneapolis and elsewhere of far greater capacity, yet there is no description of machinery whatever in Minneapolis mills we have not got in Paris mills. With this advantage in favor of Paris, we cover improvements and patents to date.

Mr. M. A. Craft, the foreman and builder of this new mill, was for many years chief foreman in the erection of mills and other manufactories for I. & E. Greenwald of Cincinnati. Mr. Craft was foreman in charge of the erection of this mill, together with a corps of first-class workmen under my supervision. Mr. Craft and his workmen may well feel proud of their workmanship, for it is, without exception, the best planned and best arranged machinery and building I ever saw, and I do think I should be a good judge in such matters, as I have been engaged in cotton and woolen mills, and saw and flouring mills since my 15th year, and the study of machinery of various kinds has been the great hobby of my life. This new mill moves off like a thing of life, in most beautiful and clock-like order, and we are manufacturing flour of various brands that cannot be excelled in quality by complete roller process; no mill-stones; no half-way bungling process like some mills who ship to Paris and bolster up by balder-

dash advertisements. Again, one very great advantage Paris mills have over any mill in Kentucky: We have a large warehouse contiguous to the mill with a 20-H. P. engine operating a large Kirth cockle separator and a large Eureka smutter, capable of cleaning in perfect order 1,500 to 2,000 bushels of wheat per day. It then passes over to the mill and again passes through the before-mentioned machinery and is recleaned.

We are determined to make flour of various brands that cannot possibly be excelled. No occasion now to float your money out of Bourbon County for flour. Oh, no! Your money goes glimmering and never returns. Soliciting a large share of public patronage,

I am very truly yours, as ever,

WM. SHAW.

PARIS MILLS, May 13, 1884.

From the above extract it will be seen that Mr. Shaw took the greatest pains to investigate the roller mill system, traveling over a large territory and examining the best mills in the country. When he had become convinced that this was decidedly the best and most improved system ever invented, and that was likely to be invented for a long time, he decided to have the best mill in the country. That he has succeeded no one can deny. His mill will be a monument to Mr. Shaw for generations to come. The celebrated mills were built at a cost of from \$30,000 to \$40,000, and are complete in every respect. Mr. Shaw has for a half century had the reputation of making the best flour to be had, and with his present improved machinery he will eclipse all former efforts. The *Press* representative examined the flour turned out by these great mills, and he has no hesitancy in pronouncing it the very best he ever saw. Mr. Shaw has employed a corps of the very best millers the country affords, and the public can rest assured that they turn out the very best flour that can be made from wheat. Not only can Mr. Shaw turn out better flour than other mills, but he can make cheaper flour than other mills. Why? Because he has the advantage of both steam and water power. More than half the year he is not at the expense of running an engine, which is, by the way, no small expense in a flouring mill. This great reduction of expense never fails to benefit his customers. He has, however, one of the finest engines in the world, which he uses when the water runs low. The following are some of the popular brands manufactured here:

Pride of Paris; Parisian Fancy; Royal; Plain Family; Fountain. These are the best brands of flour the United States can produce.

These mills ship largely to all the large eastern, western and southern cities, and the flour is daily growing in popularity. This flour has also become exceedingly popular in Lexington, and the demand is daily increasing. It is, most assuredly, the cheapest and best flour that is made.

THE USE OF CORN AS A GENERAL ARTICLE OF FOOD.

A new system of milling, says the *Journal de la Meunerie*, is being developed by M. Bez-Penot, a practical and scientific miller, for the purpose of making corn flour a common article of food, by extracting from it all ingredients injurious to health.

Corn differs from other cereals chiefly in the large proportion of fatty matter which it contains, as is shown by the following analysis.

Albumen.....	12 1/2 per cent.
Gluten.....	1/2 " "
Starch and dextrine.....	63 " "
Fatty matter.....	7 " "
Cellulose.....	1 1/2 " "
Water.....	14 1/2 " "
Ash.....	1 " "

Corn contains the normal amount of nitrogenous matter usually found in cereals, with the exception of rye and rice:

Rice contains.....	7 per cent.
Rye.....	10.55 " "
Buckwheat contains.....	13 " "
Corn.....	13 " "
Barley.....	13.40 " "
Oats.....	14 " "
Wheat.....	14.50 " "

In corn the proportion of gluten is exceedingly small, and this accounts for the facility with which corn starch is made. Starch was first made from corn in the United States, then in Italy, England, and even in France, where it competes, to a large extent, with potato starch.

The absence of gluten in corn flour is the reason why the latter cannot be made into bread. By mixing it with wheat flour, bread of a heavy and compact nature can be made; but the mixture is better suited for pastry, and even then is liable to cause a disease which is common among various nations in the South and East, whose almost sole article of food is corn flour. Northern Spain, Piedmont, Lombardy and Southern France are scourged with this disease, the nature of which is little known. The symptoms are itching of the skin and a peculiar change in the gastric mucous. The nervous system is attacked, then the brain, followed by delir-

ium and death. The cause of all these troubles is verdigris, which is found in corn in much the same manner as ergot in rye, and is more dangerous than the latter, because corn, after being attacked by it, does not alter in shape or weight, so that a separation cannot be made as in rye. But verdigris is especially dangerous, for, after being ground, it infects good flour with which it is brought into contact. In the plant, moldiness first attacks the panicle, then penetrates into the grains, turning the feculent part into verdigris.

THE WHEAT-STRAW WORM.

Isosoma Tritici—Riley.

It is decidedly important to the continued success of winter wheat culture in the southern half of Illinois, that a knowledge of some obscure and rapidly multiplying wheat insects should be widely spread among the people, in order that timely measures of defence may be taken.

Prominent among these little-known enemies of the wheat plant, is the wheat-straw worm,—an insect which only four years ago was new to science, but is now certainly known to infest winter wheat very generally in Illinois and throughout the Southern States. It causes a loss less, indeed, than that due to the Hessian fly, but still sufficient, in many cases, to leave no margin of profit to the producer. This insect is all the more deserving of attention, because we find that a simple knowledge of its life history suggests complete and easy measures of protection against its attacks.

In a field of wheat badly infested by it, many of the earliest heads to ripen will be found short and imperfectly filled with light wheat; or perhaps the plant will be shortened and stunted throughout. The closest external examination will reveal no clue to the cause of the injury; but if the straw be carefully split, a minute, pale yellow, footless grub (a and b) will be found a few inches above the root, and wholly within the stem, the cavity of which it has enlarged by eating away the inner surface.

It is about one-fifth of an inch long, and a little flattened from above downwards, and has a distinct head and a pair of brownish jaws moving laterally. The skin is naked, except that each segment bears four short bristles—two ventral and two lateral.

These larvae are usually situated so low in the stem that they are left in the stubble when the grain is cut, although a few are doubtless carried away in the straw. Here they remain until early in the following spring (a few sometimes completing their transformation in winter), when they emerge as minute, shining black insects (f), but a little more than one-tenth of an inch in length, the great majority of which have only useless rudiments of wings (i); in fact, of those hitherto bred, not one in twenty has had the power of flight.

By these adult insects, the eggs are, of course, laid in the spring for the new generation of that year.



[EXPLANATION.—The wheat-straw worm, *Isosoma tritici*. a, larva; ventral view; b, larva, lateral view; c, antenna; d, mandibles; e, anal end, ventrally; f, imago; g, h, front and hind wings of exceptional individuals; i, aborted wing in the normal flies—all relatively enlarged; j, pupa, magnified.]

REMEDIES.—As the greater part of the larvae remain in the stubble, especially if the grain be not cut very close, and as they continue here, in one form or another, at least until midwinter, and usually until the following March or April, it is at once evident that nearly the entire brood may be exterminated by burning the stubble. In case of a

light yield, or where the wheat has grown up to weeds, it will often be difficult to burn the field over; but if the insect is seriously destructive, it will doubtless pay to run a mower over the field, burning the vegetation after it has dried.

The usual absence of wings gives us another resource against its injuries, since a simple rotation of crops must almost wholly prevent the adults from laying their eggs in wheat, as they emerge from the stubble in the spring. In adjacent fields, two of which had been previously in wheat and the third in clover, as high as ninety-three per cent. of the stalks were infested in the former, and only about five per cent. in the latter.

Probably the individuals carried away in the straw are killed by threshing; but if not, the simple expedient of burning the remnants of straw-stacks remaining in the spring would complete their destruction. As most of the adults are wingless, the spread of the injury from field to field must be slow; and each may therefore protect his own fields without serious danger that his labor may be wasted through the ignorance or indifference of his neighbors.

S. A. FORBES,

State Entomologist.

NORMAL, ILL., June 14, 1884.

WHAT THE WHEAT SAID.

The editor of THE UNITED STATES MILLER has been favored by "Little Pearl," the Miller's Daughter, residing in Michigan, with the following pretty little essay:

"Though we are very small we amount to quite a good deal in the world. In the Fall we are sown broadcast over the fields, after which the farmer comes and drags and drags till we are far out of sight of human eye, and we just get our little heads above the ground before the snow comes and covers us with a warm blanket to sleep till Spring comes. But we do not get discouraged, as some people do, but try, try again. We are generally not hindered any more till about July, when the farmer comes with a large machine, called the reaper, and reaps and reaps till we are all cut down and lie very close to the ground. Then we are tied in bundles, so tightly that we can hardly breathe, and carried to the barn. When we reach our destination a machine called a thrasher is waiting to separate our poor little heads from our bodies. Our heads are then put into bags to be taken to the mill, and our bodies emptied in a pile, which they call straw, to be eaten by the horses and cattle. When we arrive at the mill we go into the elevators and are elevated to the smutters; that separates us from the cockle and dirt. Leaving the smutter we take a long slide down through the spouts to the stone. Unfeelingly they tear us to pieces. Again we go to the elevators to visit the cooler—for you must know we are quite hot by this time and the miller says we would not bolt till perfectly cool. Then we take a short spout to the bolt which separates us in three parts. Our outer surface, bran, is used mostly for animal food; next, a thin scale underlying the bran, called middlings, is used also for animal food, but considered much more valuable, and last but not least, the inner part is called flour. Then we all take to our different spouts to be emptied into the farmer's bags, and taken home again. Next, the farmer's wife takes the flour in hand and makes many nice things, the principal one of which is bread—that which is called 'the staff of life.' So you can see that, though small, we are of great importance. I think that if some people would take the moral of our story into consideration, that the great and rich are not always of the most importance, they would be a great deal better off."

"For the present world is divided into separate nationalities, and that divine command still applies: 'He that provideth not for his own household hath denied the faith, and is worse than an infidel.' And until that era arrives described by the gentleman from Virginia, patriotism must supply the place of universal brotherhood. For the present Gortschakoff can do more good for the world by taking care of Russia. The great Bismarck can accomplish more for his era by being as he is a German to the core and promoting the welfare of the German empire. Let Beaconsfield take care of England; let MacMahon take care of France, and let Americans devote themselves to the welfare of America. When each does his part for his own nation to promote prosperity, justice and peace, all will have done more for the world than if all had attempted to be cosmopolitans rather than patriots."—James A. Garfield.

PRIEST—Pat, I understand you are going to be married again.

Discontented Widower—Yis, yer riv'rence. Priest—But your wife, Pat, has only been dead two weeks.

Discontented Widower—Yis, yer riv'rence; but, shure, ain't she as dead now as she iver will be?



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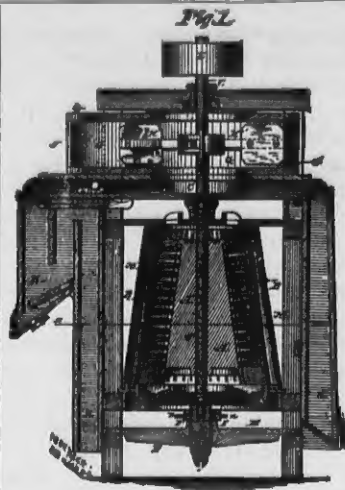
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BECKER BRUSH**And Galt's Combined Smut and Brush Machine.**

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best. ADJUSTABLE WHILE IN MOTION.

NEARLY 1,000 OF THESE MACHINES IN USE in the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

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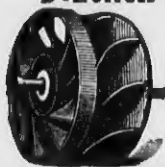
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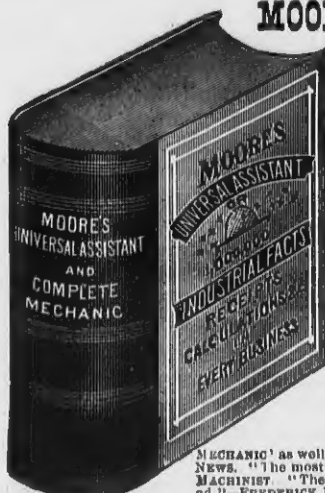
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This may be called the Book of Wonders, for it has a compilation of information from all avenues of knowledge. Nowhere else can such a mine of intellectual wealth be found: should be in every household; certainly in every office and workshop."—"KANSAS CITY TIMES."

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A new and Revised Edition of this Invaluable Work has just been issued, containing a complete Index, which increases its value ten fold. It is really a \$10.00 book for \$2.50. Price in Cloth binding, \$2.50. We will send the above book post paid, and a copy of the UNITED STATES MILLER for one year, for \$2.75, to any address in the United States or Dominion of Canada. Address all orders to E. HARRISON CAWKER, Publisher, Nos. 116 and 118 Grand Avenue, Milwaukee, Wis.

BRAN AND MIDDLINGS.**MITCHNER & LYNNE,**

Old Corn Exchange,

LONDON, ENGLAND.

Are C. I. F. Buyers of the Above.

NOTICE TO FLOUR MILL OWNERS**OWNERS AND PURCHASERS OF PURIFIERS, ATTENTION!**

The suits of the Consolidated Middlings Purifier Company, now pending in the U. S. Supreme and Circuit Courts, have now reached such a stage as leaves no reasonable doubt of their early decision against the manufacturers and users of infringing Purifiers, and for this reason, in justice and fairness to all concerned, the company hereby gives notice that its license covering the use of infringing machines should be secured before the termination of the above mentioned suits, otherwise such Purifiers will be liable to the full amount of damages and cost decreed by the courts.

Following the late decision of the Canadian Courts, sustaining the Geo. T. Smith Purifier patents, Millers there pleaded ignorance of litigation affecting the title to Purifiers in abatement of the damages assessed against them; but having given this public notice, the company will not consider itself bound to accept such a plea here

Jackson, Mich., July 1st, 1884.

CONSOLIDATED MIDDLINGS PURIFIER CO.

TO OWNERS AND USERS OF PURIFIERS!**NOTICE No. 2.**

Smarting under our success and the fear of danger in the future from us, the Smith Co. have lately published a blustering manifest through all the Milling papers, asking millers to come up and settle—settle for what? We say to the world at large, don't you do it, wait until they can "deliver the goods"; and remember the fate of the man who once did sell the Lion's skin while the beast lived, was killed in hunting him. The true situation is this: We beat them in the U. S. Court in '83, two eminent judges on the bench, by whom that famous utterance was made, "Case is as far ahead of Smith as Smith is ahead of Stoll." In that trial we simply defended ourselves, but warned these people (the Smith Co.) that if they did not keep quiet we would attack and overthrow their patents. This we are now doing, and have now reached a stage as leaves no reasonable doubt that it will not be long until there will be no Smith patents to threaten and alarm millers under. We know whereof we speak and so do they. They refer to their Canada suits where the millers were using the Smith brush; the brush is not in contest with us, we don't use a brush; we have something better, and in our fight we have weapons in our hands that the Canada folks know nothing of. Men and brethren, be of good cheer, we are still on deck; you all know very well the blowing qualities of the Smith folks and their agents. We will protect and defend all users of the Case Purifier.

CASE MFG. CO., Columbus, O.

BAKERS' "MAKINGS."

HOW THEY DO IT IN LONDON.

It is a stock argument—or rather a stock assertion—with a certain class of public speakers and newspaper writers that "bread is cheap." Cheapness, however, is a term of comparison, and although bread is undoubtedly cheaper than it might be, yet it by no means follows that the "staff of life" is as cheap as it ought to be. Any one acquainted with the official statements of both master bakers and journeymen bakers knows very well that means, not the most commendable, are practiced to unduly increase the earnings of the one and the profits of the other, at an enormous loss to the consumer. Reference is not now made to the custom of giving short weight, though this is by no means an insignificant item in the profits of the master baker. This illegal—indeed, criminal—practice is regarded by the public at large as a thing of the past, and persons in the control of households as a rule hasten to butter the bread they buy and do not trouble to weigh it. If, however, the statements published in the official organ of both the masters and the journeymen may be credited, the practice of selling loaves of less weight than is pretended, sometimes to the extent of half a pound a loaf, is all but general throughout the metropolis, and there can be no doubt that the "makings" by this means are a considerable source of profit to the master bakers of London. Short weight, however, is not one of the bakers' "makings," as the term is understood in the trade. "Makings," is a technical term signifying the journeymen's perquisites. These perquisites are of a peculiar character, and forcibly remind one of the days of Sheffield rattening. There is, for instance, "yeast money." The yeast-dealer charges the baker more than he ought to do for his yeast, and the difference is afterwards handed over to the journeymen. Should a master baker wish to try a new sort of yeast, or should the yeast-dealer repudiate the custom of the trade, the journeymen take care that the yeast will not work, and the bakings are spoiled. A similar method obtains in regard to millers. Unless the miller pays "sack money" he finds that some of his empty sacks before being returned have been so damaged as to be unfit for use, while others are never returned to him, and he cannot discover what has become of them. The most important of the "makings", however, consists in downright fraud, for which convictions by the magistrate not unfrequently take place. It is a practice on the part of the journeymen who deliver bread at large households to strike a bargain with those who give the orders to deliver a loaf less on each order than is charged for in the bill, the journeyman and the domestic sharing the profit made by the fraudulent transaction. When it is remembered that in many instances the "makings" come to as much as the wages, it will readily be seen that unscrupulous masters will willingly consent to a scheme by which they pay their employees very low wages, leaving the difference to be made up by the ingenuity with which "makings" may be increased at the cost of the customers. The defense to all this is that it is "the generally acknowledged custom of the trade."

Much, however, as bread consumers suffer by the methods here indicated, they are still further mulcted by the direct action of the master bakers themselves. These tradesmen, to the number of four thousand, are associated into a society or "ring," that has branches in every district of the metropolis. The branches publish reports of their meetings with a candor that by some persons might be called a pig-headed candor. Thus quite recently the New Cross, Peckham and Old Kent Road branch stated that one of its members (name and address given) "made a complaint about a chandler selling under price," and "it was voted and carried that Mr. F. Korn should go and try to put the matter right." In another district it was decided "that the price of bread should remain the same." In the Kilburn district, after a complaint "of one shop selling under the district price, steps were ordered to be taken to stop the practice; and then Mr. Quainbush sang an excellent song entitled 'The May Air,'" and other harmony followed. In the Finsbury and Clerkenwell district "the secretary reported the general price in Clerkenwell and St. Luke's 5½d, and mentioned that he had received an invitation to attend a meeting of the Eastern and North-Eastern Association at the Horns Tavern, Shoreditch, to take counsel with other representatives invited as to the possibility of obtaining an advance to 6d., and making one uniform price in all the districts concerned." The Bermondsey branch stated that the society had been "successful in making an improvement in the Rotherhithe New Road, with the promise that 6½d would be the figure on Monday next." These are a few of many instances which show that the master bakers by a

"ring" keep the prices of bread far above what would rule with open competition. Pressure is brought to bear upon those tradesmen who would sell at a fair profit "under the district price"—whether they be members of the "ring" or not—by means of what are called "missions," that is deputations; and it will be readily imagined the persuasion, the cajolery, and the threats that will be used by the "missionaries." Of the underseller, it is officially said, "he is not an independent existence, but a parasite, living on your flesh, and feeding on the millers' vitals. When the miller ceases to sustain him, he ceases his wretched life, and you are freed from his noxious irritations." The millers are therefore called upon to "Boycott" the underseller. They are told "if one of your customers should determine to be an underseller, and you have a dozen who pay their bills with promptitude and regularity, you ought without a moment's hesitation to sacrifice the base for the good and pure. . . . Nothing can justify you in upholding men who have only one object in view—to waste the millers' capital for their own greed at the expense of the whole district. . . . You should not allow one scabby sheep to contaminate the whole flock." The amount pocketed by the master bakers by the practices here indicated is not considered a portion of bakers' "makings," as the term is understood in the trade; but the public will regard it as such, though not perhaps of so reprehensible a nature as the "makings" that fall to the lot of the journeymen.

It may be safely asserted that few persons are aware that they are being "done all round" whenever they buy a loaf of bread. To say nothing of trifles like "yeast money" and "sack money" and adulteration, there are short weight, false quantities, and prices artificially enhanced nearly 20 per cent. The facts here quoted are all "official," and some of them have come to light in consequence of a squabble between the masters and the journeymen about the "makings."—*Pall Mall Gazette*, (London).

[ADVERTISEMENT.]

INTERESTING TO STEAM USERS.

In February last, circulars and letters began to be freely circulated by rival engine builders, certifying to the fact—from necessity—that we took the first premiums for "the Best Automatic Engine" (which we did at both Louisville and Cincinnati, regardless of class) but that their engines were not entered in the "same class" with us.

One letter began as follows: "The Cummer Engine Co., of Cleveland, Ohio, are advertising all over the country that they received 'the gold medal, highest award, at the Louisville Exposition in competition with, etc.,'" (naming several engines).

While the fact is, we did not advertise the name of any competitor. One of our agents, however, did a few times, but without our request or consent. Our advertisements have been very courteous, and bear, we believe, the mark, of gentlemanly and friendly competition.

We enjoyed quietly the notoriety and prominence so much gratuitous advertising gave us, and our quietness encouraged the issuance of a bolder sheet, headed "Fact versus Falsehood," which, with a good deal more flourish, aimed to establish the assertion more positively, that we claimed more in our advertisements than we should, and that certain engines were not entered in the same class with us. We allowed this circular to live as long as any interest sustained it, and now feel it incumbent on us to give the facts without any falsehood.

Below will be found the classifications given to the original applications made at Louisville and Cincinnati, as taken from the record books and from the original applications, all of which were exhibited to us. We have certified copies of the original applications, and will furnish copies to all who may be interested enough in the matter to ask for them.

CLASSIFICATIONS AT LOUISVILLE.

<i>Armington & Sims, Providence, R. I.</i>	
Application for space, No.	1894
Department, No.	2
Group, No.	5
Class, No.	36
<i>E. P. Allis & Co., Milwaukee, Wis., Reynolds</i>	
Application for space, No.	1190
Department, No.	2
Group, No.	5
Class, No.	36
<i>Buckeye Engine Co., Salem, O.</i>	
Application for space, No.	1125
Department, No.	2
Group, No.	5
Class, No.	36
<i>Cummer Engine Co., Cleveland, O.</i>	
Application for space, No.	1185
Department, No.	2
Group, No.	5
Class, No.	36

The following are condensed copies of original entries at Cincinnati Exposition, as taken from the record books.

Atlas Engine Works, Indianapolis, Ind.—Entry 163, Class 1, entered for premium one (gold medal and \$100) Automatic Cut-off Stationary Steam Engine.
Cummer Engine Co., Cleveland, O.—Entry 174, Class 1, entered for premium one (gold medal and \$100) Automatic Cut-off Stationary Steam Engine.
Armington & Sims Engine Co., Providence, R. I.—Entry 204, Class 1, entered for premium one (gold medal and \$100) Automatic Cut-off Stationary Steam Engine.

We have given above the classifications only, but, as before stated, we are ready to give the exact copies of the original entries in full to all who may care to have them. Please notice that the department numbers, group numbers, and class numbers are all the same with all the entries.

At Louisville there was no premium offered for a condensing engine, nor was there any competition between any condensing engines.

Our opinion is, that the engine which obtained a medal as a condensing engine, should have been compelled by the machinery committee to stay in the class in which it was entered, and receive a second or third premium, or none at all, as the judges might decide.

We believe the way to meet such "bastard" productions as have been circulated with reference to this matter, is by dignified silence, and this is the course we would have preferred to pursue in this case to the end. Our only object in issuing this circular is to meet the imputation of falsehood, so boldly made.

Please compare our circular with the other productions issued, but "fathered" by nobody, and note carefully, that we place willingly what we say over our name.

Yours truly,

THE CUMMER ENGINE CO.,
Cor. Lake and Kirtland Sts., Cleveland, O.

NONSENSE.

A DETROIT dealer in windmills had a visitor the other day who looked one of the machines all over with a critical eye and asked numerous questions, about how long it would last and what it could be expected to do. Seeming satisfied on these points, he observed: "Well, the price seems to be reasonable enough, and now let's see what it will cost for a steam engine to drive it."

A BOILER-MAKING firm used to have in its employ a couple of helpers who were as silly and comical as people ever get to be. One was a Dutchman and the other a Yankee; and when together they were the source of an infinite amount of fun for "the boys." One day the Dutchman was weighing himself, when the Yankee, observing what was taking place, remarked in evident disgust: "Heh, Dutchy, I can beat that weight standing on one leg." "By tam you can't," retorted the Teuton, "and I pet you the beer." Just as the Yankee was standing on the scale, poised on one leg, and Dutchy was manipulating the weight, one of the firm came around to the scales and took in the situation. He twisted himself so with laughter that Dutchy and Yankee thought he had gone crazy. But they drank their beer in good faith, both laboring under the impression that one-half of "Yankee" weighed more than the whole of "Dutchy."

DEAN RICHMOND AND HIS SHINGLES.—"I've got a story about Dean Richmond," said a railroad man to a *Globe-Democrat* reporter. "It happened up in New York in '56, I believe. Dean Richmond had an office in Buffalo then. One day, while the old man was scribbling away—you know he wrote a hand in comparison with which Horace Greeley's writing was like print—a fellow that had a lot of shingles piled up at a station fifty or sixty miles down the Central walked in. Dean looked up and asked:

"What d'ye want?"

"I've got some shingles down here I want to sell."

"Well, you go back home, and when I want 'em I'll send for 'em," and he commenced scribbling again.

About three months afterward the shingle man wanted to go to Albany for something or other, and wrote to Richmond asking for a pass. In a day or two he got a letter about eight words long, written on plain note paper and signed 'Dean Richmond.' There wasn't a man in town that could make out any of it except the signature, but the shingle speculator supposed it was Dean's way of making out a pass, so he took the train for Albany, and presented it to the conductor, who glanced at it, said: 'All right,' and handed it back to him. Well, sir, he traveled for weeks on that piece of paper, until one day he landed in Buffalo again. Passing Richmond's office, he thought he'd drop in and thank the old man for his courtesy. He said: 'Mr. Richmond, I am very much obliged to you for that pass.'

"What pass?" was the gruff response.

"Why, the pass you sent me a month or two ago."

"I didn't send you no pass."

"Yes, you did; here it is," said the shingle man, producing the paper.

"Old Dean took it, studied over it a minute,

got purple in the face, and shouted in a voice trembling with anger: 'Why, you—fool, you, that ain't no pass;' and then, shaking it in his visitor's face, he pointed at it and added with a yell: 'That says, 'Why in h—l don't you send them shingles?' Dean Richmond. D'ye understand that, you—idiot.'

"The shingle man beat a hasty retreat, and it took the old man a week to cool down."

OUGHT TO BE SKINNED.—"Is my shaving agreeable to you, sir?" a loquacious barber asked a customer whom he had been flaying alive.

"My wife would admire it very much," rather indefinitely responded the man under torture.

"Ah," said the barber with great complacency, "ladies are often excellent judges of their husbands being well shaved. And you think mine will suit, sir?"

"No doubt of it in the world. It was only this morning she became angry because I told her I could not afford to buy her a spring bonnet, and said I ought to be skinned alive."

The barber lost himself in reflection.

AN UNSOLVED PROBLEM.—According to the Chinese, cask-making has been known to them for many thousand years. They labored, however, under this drawback. They did not know how to give the final touch by which the lid is fastened in; the only method that struck them as feasible being to place a boy inside whilst the cooper tightened the hoops and secured the lid in its position. But how was the boy to be got out? This remained an unsolved problem for three thousand years. Gordon must have heard this legend when in China. He reminds me of the boy. He jumped into the cask, and since then has been shouting through the bung-hole that he is going to "do for" all sorts of people, and always abusing those who will not aid him, without considering that the really important question is how he himself is to be got out of his cask.—*London Truth*.

A NEGRO was recently seated on a rail fence in Arkansas, intently looking at the telegraph wires. A gentleman passing said:

"Watching the wires?"

"Yes sah."

"Waiting to see a message go by, eh?"

The Negro smiled and said:

"Yes sah."

The gentleman kindly told him that messages were invisible, and explained the working of the electric current to him at length. Concluding he said:

"Now you know something about it."

"Yes sah."

"What do you work at?"

"I am a telegraph operator at the Hazel Switch Station, sah."

SITTING UP AND SITTING DOWN.—Inquiring child—"Pa, what is the difference between sitting up and sitting down?" Pa (with perfect confidence in his ability to explain)—"Why, my child, when somebody is standing up, and he seats himself, he sits down; and when he doesn't go to bed, and sits down, he sits up." Inquiring child—"But pa, if he sits, how can he sit without sitting down; and if he sits down how can he sit up?" Pa (with a dawning doubt of his ability to make it quite clear) "You see my child, if he sits down, why he—I mean if he sits up—go to your ma, and don't ask me questions when I'm busy."—*Boston Gazette*.

"WHAT'S the matter with the bank?" demanded an excited tourist.

"Closed," replied the calm citizen.

"What," exclaimed the excited one, "not closed?"

"Shut up tighter than wax," asserted the calm one.

"Well, that's queer," said the tourist. "Not ten steps away from where we now stand a citizen told me she was 'busted wide open,' and now you say she is 'shut up tighter than wax.' What liars some men are." And he made an entry in his note book.

HER FAVORITE INSTRUMENT. "Is your wife a musician?" said Mr. Grimes to Mr. Greatheart last week.

"I am proud to say she is a musician of great power," was the reply.

"What is her favorite instrument?"

"The organ."

"Indeed, what make does she prefer, Mason & Hamlin's or Estey's?"

"Her preference is the nasal organ."

"The nasal organ? Why, what do you mean?"

"Just what I say. You can satisfy yourself of the truth of my statement any night after 11 o'clock by placing yourself within reasonable distance of our sleeping room."

"Yes," said one of a company, when the conversation turned upon misers, "Smith was the most miserly man I ever saw."

"Indeed!"

"Oh, he was dreadful. He always got drunk when he was going to count his money."

"What for?"

"So that he would see double, you know."

1876--NINTH YEAR OF PUBLICATION--1884.

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FOR THE

UNITED STATES MILLER

Every Mill Owner, Miller, Millwright, Mechanic and Engineer

Should be a regular subscriber to this valuable Journal which was established May 1, 1876. It is a complete record of all industrial events of interest to the above named CLASSES OF THE INDUSTRIAL PUBLIC. This Journal is issued monthly and the subscription price has always been

ONE DOLLAR PER YEAR.

Desiring to add a great number of names to our regular subscription list this year, we have made arrangements with other publishers so that we can, for a short time, afford to offer you the following

REMITTANCES

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PROPOSITION I.—For One Dollar we will send you postpaid the *United States Miller* for one year and one copy of

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In plain binding. It embodies everything in Figures that is *practical*, and is *adapted* to the wants of Farmers, Mechanics and Business Men; and by ingenious and original systems, makes the art of computation *easy* and *simple*, even for a child. It gives the *correct* answer to nearly 100,000 *business* examples of almost every conceivable kind, and is worth its weight in gold to every person not thoroughly versed in the science of numbers. In selling GRAIN of any kind, it will tell how many bushels and pounds are in a load and how much it will come to without making a single calculation. In like manner it shows the value of Cattle, Hogs, Hay, Coal, Cotton, Wool, Butter, Eggs and all other kinds of Merchandise. In computing INTEREST it wages it has no equal, either in easy methods or convenient tables. It shows at a glance, the accurate measurements of all kinds of Lumber, Logs, Cisterns, Tanks, Barrels, Granaries, Wagon beds, Corncribs, Cordwood, Hay, Lands, and Carpenters', Plasterers' and Bricklayers' work, etc. It, however, not only tells results, but also teaches entirely new, short and practical Rules and Methods for rapid commercial calculations, which will prove highly interesting to every student of this great and useful science. Price separate—in plain binding, 50 cents; No. 3, elegant binding, pocket book form, slate and memorandum, \$1.00 per copy, or the UNITED STATES MILLER for one year and one copy of No. 3 Calculator for \$1.50.

PROPOSITION II.—For One Dollar we will send, postpaid, the *United States Miller* for one year and

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This is printed on handsome white paper from new type, so as to be easily read. It is neatly bound in heavy paper covers with beautiful designs, and printed in handsome colors. It contains a handsome frontispiece in 10 colors. Every story is complete.

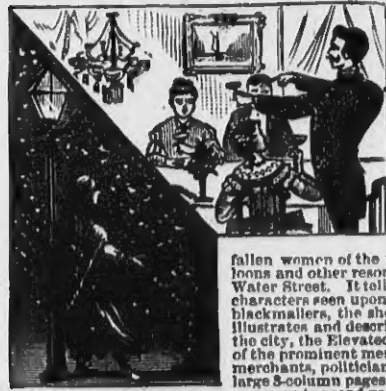
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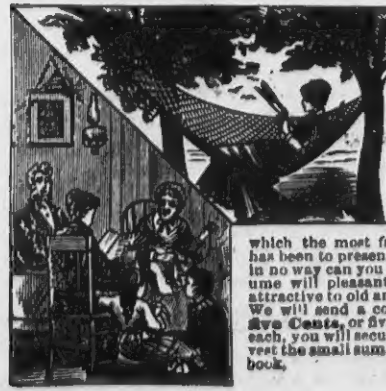
THE GREAT EMPIRE CITY. Or, HIGH AND LOW



This remarkable book is a complete Mirror of the Great Metropolis! In it is *Gotham Unmasked*, and its secrets and mysteries laid bare to the world. It describes every shade of New York life, from the gilded palace of the millionaire to the wretched garret of the mendicant. It tells all about Wall Street and the Stock Brokers, and shows how fortunes are made and lost in a day, and how rich men are swamped in the whirlpool of speculation. It pictures every description of fashionable society, in the Fifth Avenue mansion, the club, and the hotel. It tells of the life of the gay men and women of the metropolis, and shows how fortunes are annually squandered in the pursuit of pleasure. It likewise describes the gamblers and the gambling dens, and how, through them, young men are lured to early ruin; the Confidence men, and how they entrap rural visitors to New York; the games of keno, faro, roulette and rump-stone, etc. It pictures the life of the poor and lowly, and tells of the wretched tenements where scores of human beings live in a single room; the Chinese and the opium dens, the Italians and their haunts, the fallen women of the metropolis, the abodes of crime and mysteries, the Water Street, the Bowery after midnight, and the low life of the denizens of the city. It tells all about the theatre and the theatrical profession, the strange characters seen upon the streets and their peculiar methods of gaining a livelihood, the blackmailers, the shoplifters, the thieves, the burglars, the detectives, the police. It illustrates and describes all the great buildings, streets, avenues, and other features of the city, the Elevated Railways, the great Bridges, etc. It gives portraits and sketches of the prominent men of New York, including the great stock operators, millionaires, merchants, politicians, actors, etc. "THE GREAT EMPIRE CITY" is a large book of 64 large 8-column pages, with handsome cover, and is brilliantly illustrated throughout. If you were to spend years in New York you would know less of the great city than you will learn from this book. It is more interesting than the most thrilling romance, proving that truth is stranger than fiction. "THE GREAT EMPIRE CITY" will be sent by mail, post-paid, upon receipt of only Twenty-Five Cents, or five copies for \$1.00.

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In view of the fact that correct spelling and pronunciation and a knowledge of the significance of words in frequent use is the greatest educational accomplishment, the importance of a National Standard Dictionary in every household can scarcely be over-estimated. We cannot think well, talk fluently or write intelligibly without having acquired such a dictionary knowledge of the language to be employed.

The place for a child to begin this dictionary branch of his education is at home. If this fact were duly appreciated, the average intelligence of the nation would be doubled in five years by a revolution of our present deplorable process of memorizing abstract and meaningless words.

When a word that is not understood is first heard or seen is the time to "study it up" by the aid of a reliable dictionary which should be ever at hand. By thus taking one word at a time while it is associated with the object or the thought which it is designed to convey, it may be really learned as well as memorized, almost without effort; while to undertake to memorize a dozen or fifty such words in a lesson at school would result in the accumulation of useless rubbish rather than available knowledge. Not only does the accumulation of this useless rubbish destroy the child's ambition to learn and his thirst for knowledge, but it often shatters his constitution.

This is a very grave evil of our present school system which must be apparent to every intelligent and thoughtful person. But this inscurable evil cannot be remedied while a dictionary of any kind is not to be found in one household in ten the country over. Hence, to supply this need in nearly every family, the New American Dictionary and Compendium of Useful Knowledge has been prepared for the press at an enormous expense. Every word in common use is correctly spelled, phonetically pronounced and comprehensively defined.

Combined with the dictionary is an exceedingly valuable Reference Compendium of Useful Knowledge, embracing 84 different subjects. This amount of information which is almost as important as the dictionary itself, can be obtained nowhere else for less than five times the price of the book.

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N. B.—We shall be pleased to have millers in all sections of the country write us giving items of news, description of new mills, milling processes, etc.

ITEMS OF INTEREST.

MEXICAN STATISTICS.—The following is from the *Two Republics*, an Anglo-Mexican paper printed in the City of Mexico: "The following statistics regarding Mexico are approximately correct, and are given in this form for easy reference: The population of Mexico is 10,000,000, and there are 146 cities, 872 towns, 4,466 villages, 5 missions, 5,689 haciendas and 14,605 ranches, besides 2,213 collections or groups of denominated 'congregations,' 'barrios,' 'rancherías,' etc. Value of private real estate: Rural, \$773,000,000; private real estate in cities, \$5,688,036,000; cattle of all kinds belonging to individuals, \$126,000,000; property belonging to the nation \$40,000,000; total real estate, not including mines, coast, bays, lakes, rivers, etc., \$3,549,400,000; agricultural products, \$177,451,086; industrial products \$14,000,000.

THE FRENCH METRE.—The French Metre corresponds in France with our yard. The French people buy and sell cloth, etc., by the metre just as we do by the yard; but the metre is over one-twelfth longer than our 36-inch yard; it is about 39½ inches (39 and 388-1000 inches) long. Our yard covers 9 square feet; the metre covers very nearly 10½ square feet, (or 10 and 768-1000 square feet). Our acre contains 43,560 square feet, or 4,840 square yards, or about 4,047 square metres. The French reckon distances not by our mile, but by the kilometre, or 1,000 metres. They say a man or horse traveled so many kilometres. Their kilometre is 3,281 feet, while our mile is 5,280 feet. So the kilometre is about five-eighths of our mile. The French do not have measures corresponding with our feet and inches. They divide the metre into 100 parts calling each part a centimetre, which is about two-fifths as long as our inch. Our foot equals a very trifle over 30½ centimetres. The exact metre measure is one ten-millionth of the distance from the Equator to the North Pole—that is, one forty-millionth part of the distance around the earth, measured north and south.

DIRECTOR-GENERAL E. A. BURKE, of the New Orleans Exposition, has accepted the following proposals to furnish engines for the World's Exposition:

	No. Engines.	No. H.P.
Cummers Engine Co.....	1	180
Cummers Engine Co.....	2	300
W. A. Harris.....	1	650
W. A. Harris.....	1	180
E. P. Allis & Co.....	1	500
Brown Engine Co.....	1	400
Robert Wetherill & Co.....	2	600
Armington & Sims Engine Co.....	4	600
Westinghouse Engine Co.....	2	400
Taylor Mfg. Co.....	1	200
Smith, Meyer & Schuer.....	1	200
Novelty Iron Works.....	1	200
Buckeye Engine Works.....	1	125
E. M. Ivers & Son.....	1	100
Lane & Bodley.....	1	75
Jerome Wheelock.....	1	280
Hooven, Owens & Rentschler.....	1	500
Total.....	23	5,950

WOULDN'T DO.—"Yes, I do want a collector," said the millinery man, "but I don't think a lady would suit me."

"Why not?" asked the female applicant. "I could not only do your collecting, but also assist in the store, for I am well versed in this business."

"That may be, but there is another great objection."

"What is it?"

"Well, I don't think a woman could make a first-class collector."

"Give me your reasons."

"Because," answered the merchant as he grinned a raise-the-plumes-fifty-cents-apiece smile, "because woman's work is never done, you know."

TOM OCHILTREE'S LUCK.—Tom Ochiltree, the red-headed Texas member who shares the honor of being the biggest liar of the South with Joe Mubhatton, came into the House the other day with all the indications of a bad spree upon his countenance. His associates greeted him and inquired, "What the devil have you been doing, Tom? You look as though you had been out on a lark."

Tom answered that he had been up all night playing poker.

"What luck?"

"Never had such luck in my life—curse it. Why, I lost \$6,000."

"Six thousand dollars!" echoed his friends in amazement.

"Yes," said Tom, turning to his seat, "and the worst of it is that \$10 of it was in cash."

SPECIAL BUSINESS NOTICES

ABOUT THE CURTIS' HEILFRICH GRAIN CLEANER.

The following letter has just been received by the manufacturers, and speaks for itself.

Office of Chas. A. Pillsbury & Co.,
June 26.

Curtis & Heilfrich, City.

Gentlemen:—"We are using a number of your new Wheat Cleaners, and are well satisfied with them. We consider it a superior scouring machine, especially for cleaning and putting in milling condition, smutty wheat which requires very thorough scouring in order to mill it at all."

Very truly yours,

CHAS. A. PILLSBURY.

MILL COGS AND CONVEYOR FLIGHTS. Cogs to order on shortest possible notice. Large stock of conveyor flights on hand.

N. P. BOWSHER.

South Bend, Ind.

BOLTING CLOTH!

Don't order your Cloth until you have conferred with us; it will pay you both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

Address,

CASE MANUF'G CO.

OFFICE AND FACTORY:

Fifth St., North of Waughten,

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FOR SALE.

A horizontal boiler and engine in first-class condition. Boiler 15 horse power. Engine 10 horse power. Can be seen running at the RIVERSIDE PRINTING OFFICE, 116 and 118 Grand Avenue, Milwaukee. Also Feed Water Heater and line of Shafting.

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PRACTICAL

MILLWRIGHTS

PLANS, SPECIFICATIONS & ESTIMATES

MADE FOR ALL KINDS OF

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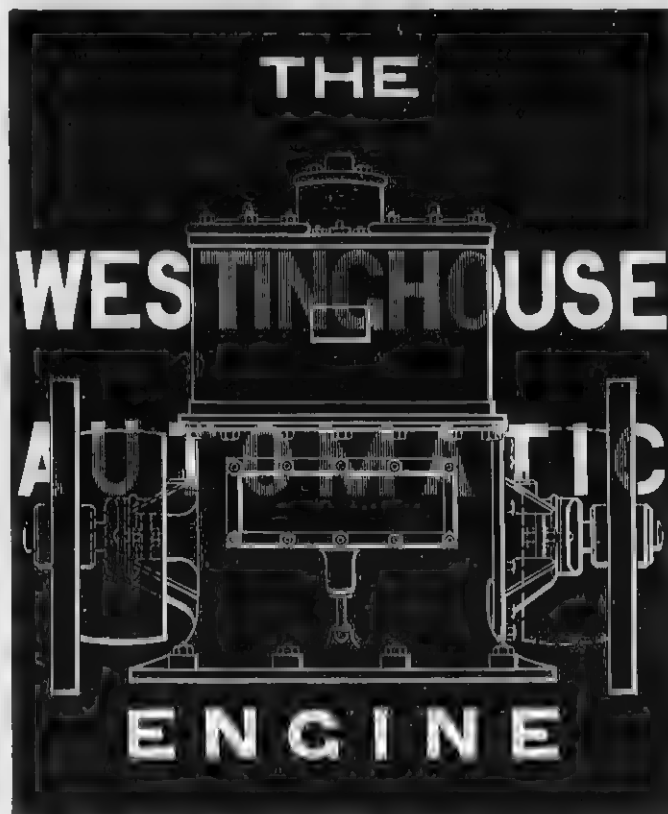
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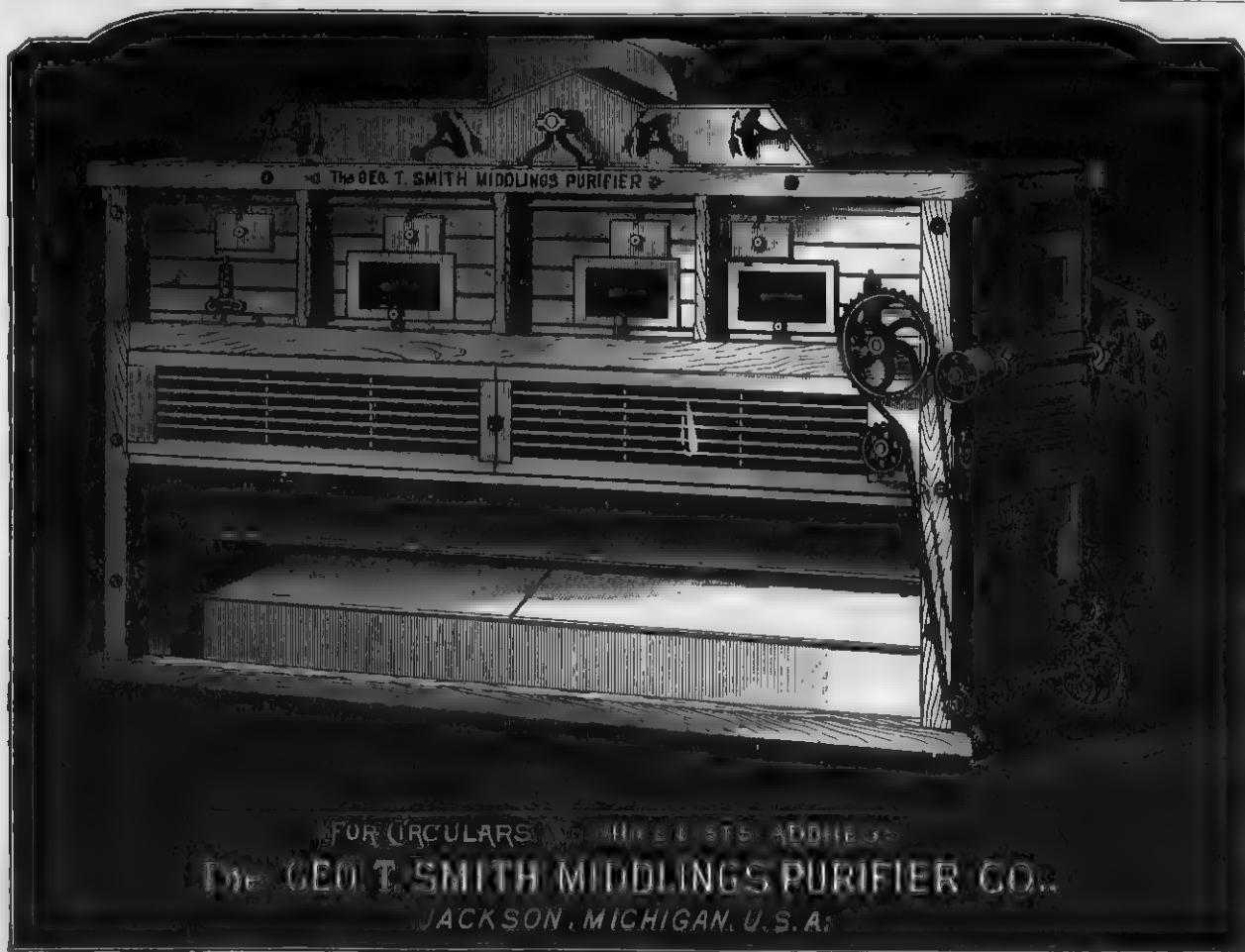
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—IS THE—

Best constructed and finished, gives better Percentage, more Power, and is sold for less money, per horse power, than any other Turbine in the world.

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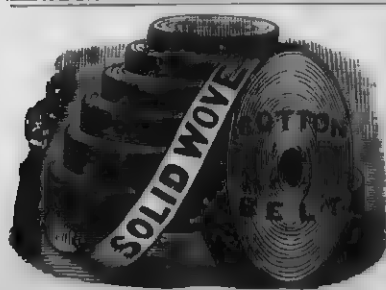
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Our Machinery for this purpose is very accurate. Can do work promptly.

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THE WESTINGHOUSE AUTOMATIC ENGINE,

requires that their entire time should be given to the Manufacturing Department of their business. They have arranged with Messrs. Fairbanks, Morse & Co., of Chicago, to conduct the sale of their Engines throughout the Western States and the Territories. Messrs.

FAIRBANKS, MORSE & CO.

have the most extended facilities for meeting the requirements of the trade, having Branch houses at prominent points, and a large force of experts, competent to thoroughly understand the wants of customers, and to furnish them with Engines that will perform the required work in the most satisfactory manner. The Westinghouse Automatic Engine is already a fully demonstrated success, with great economical advantages for all purposes, and this arrangement promises to place them still further in advance

45 LBS FLOUR.

60 LBS. WHEAT.

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Practical Mill Builders of both Buhrs and Rolls, or both combined. Building new and remodeling Buhr mills with all the latest improvements, including Buhr Dressing, new process Bolting, together with the latest improvements in wheat cleaning. GUARANTEEING RESULTS.

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COMMON SENSE THREE REEL
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Adapted to all systems of milling, has many advantages over all other Purifiers in making a complete separation of the fine from the coarse middings by controllable air currents, purifying separately on the same machine, handling middings without granulation, occupies less space, runs with less power, requires less attention, is made more durable, and is less liable to get out of repair than any other purifier made. For 1884 Catalogue, Prices, etc., address,

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Alcott's Improved Turbine.

This Wheel is considered one of the most correct that has been devised, gives the highest results, and, with late improvements, is now the best, most practical, and efficient Partial Gate Wheel in existence.

For Economy, Strength, Simplicity, Durability, and Tightness of Gate, it has no equal.

State your requirements, and send for Catalogue to

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[Please mention this paper when you write to us.]

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FLOUR AND GRAIN

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Made entirely of STEEL.
ONE MAN with it can
easily move a loaded car.
Will not slip on ice or
grease.

Manufactured by
E. P. DWIGHT,
Dealer in Railroad Supplies, 407
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BUILDERS FROM THE RAW MATERIAL OF

ROLLER MILLS, CENTRIFUGAL REELS,

Flour Bolts, Scalping Reels, Aspirators, Millstones, Portable Mills,

AND KEEP THE LARGEST STOCK OF

All Kinds of Mill Supplies in the United States.

500 BARREL MILL IN MISSOURI.

READ WHAT AN OLD MILLER, WHO HAS THIRTY-FOUR PAIRS OF THESE ROLLS IN CONSTANT USE, SAYS:

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 38 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

Yours, etc.,

R. H. FAUCETT, Prest.

500 BARREL MILL IN ILLINOIS.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.

Yours respectfully,

DAVID SUPPGER & CO.

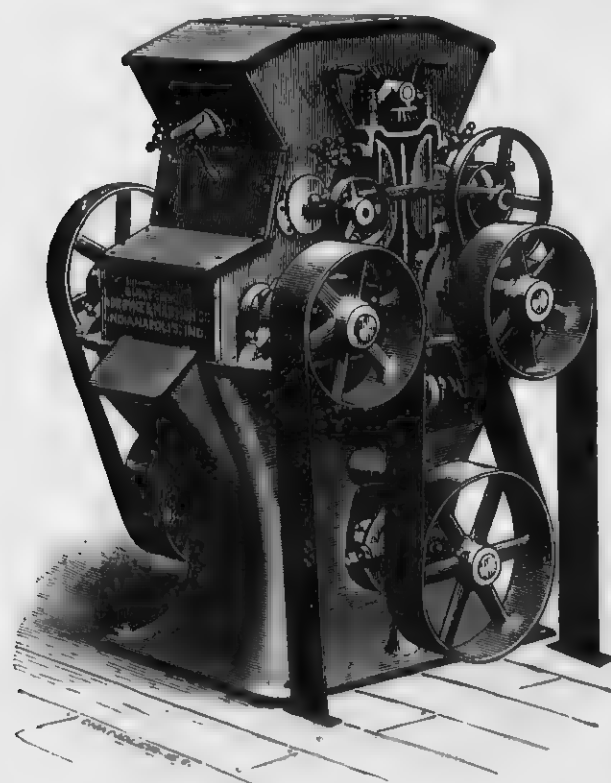
125 BARREL MILL IN INDIANA.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—The 125 barrel All Roller Mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading Mill-furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantee. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.

Yours truly,

J. T. FORD.



Letters on file in our office from a large number of small Roller Millers giving as favorable reports as above. A portion will be published as occasion demands.

SPECIAL MILLING DEPARTMENT!

Mill Builders and Contractors—Guarantee Results.

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.

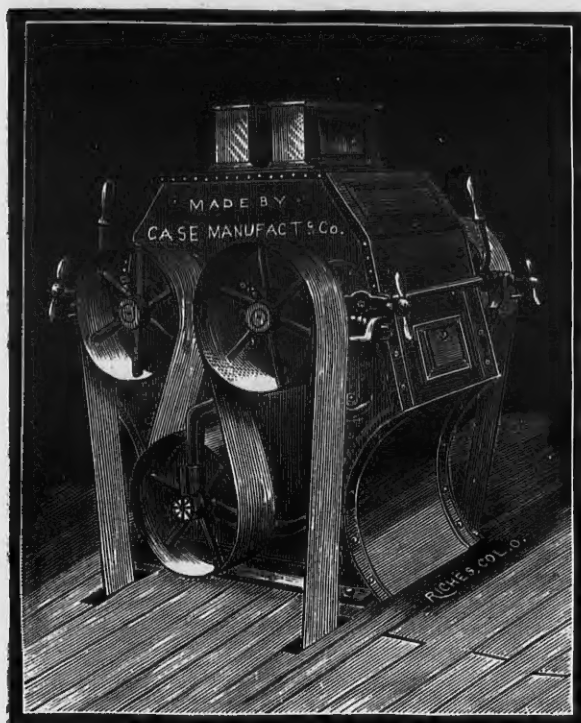
THE . CASE . MACHINES !

Making, as we do, all the Machines that go into

GRADUAL REDUCTION MILLING

(Excepting Cleaning Machinery),

They are fitted and adapted to each other throughout, and we are thereby enabled to make the cost extremely moderate.



"BISMARCK"

9x18 FOUR ROLL MILL.

FOR SMALL MILLS

NO COMBINATION MILL,

8-ROLL, FOUR CORNERED

or any other Short Cut plan

Can Equal Our System.



"Little Bismarck"

6x12 FOUR ROLL MILL.

It is the simplest plan yet introduced, and we guarantee as good results from Small as well as Large Mills. We know just what to do to insure success. We are fully prepared

to change Burr or partial Roller Mills to our plan, or to build new mills complete, and if you only want a

**BREAK MACHINE AND SCALPER COMBINED,
FINISHING ROLLS, PURIFIER, CENTRIFUGAL REEL
OR A FULL MILL,**

you will find it worth your while to write us before you decide.

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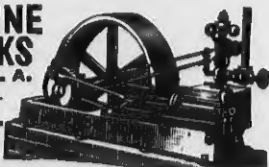
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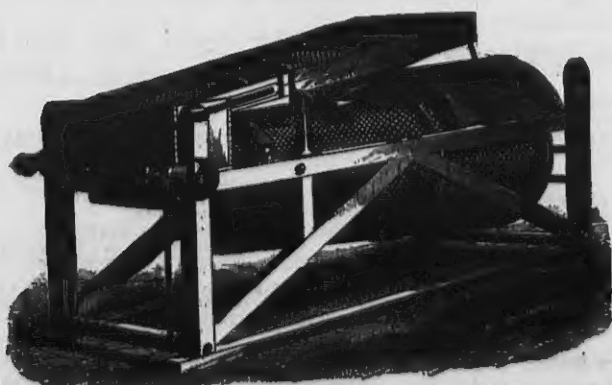
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Prices.

ATLAS ENGINE WORKS
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MANUFACTURERS OF
STEAM ENGINES & BOILERS.
Carry Engines and Boilers in Stock
for immediate delivery.



Cockle Separator Manufacturing Company
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MANUFACTURERS OF

**Kurth's Improved Patent
COCKLE SEPARATOR,**

Built also in combination with Richardson's
Dustless

Wheat Separators.

Large Capacity combined with Good Quality
of Work. *Beardale's Patent*

GRAIN CLEANERS,

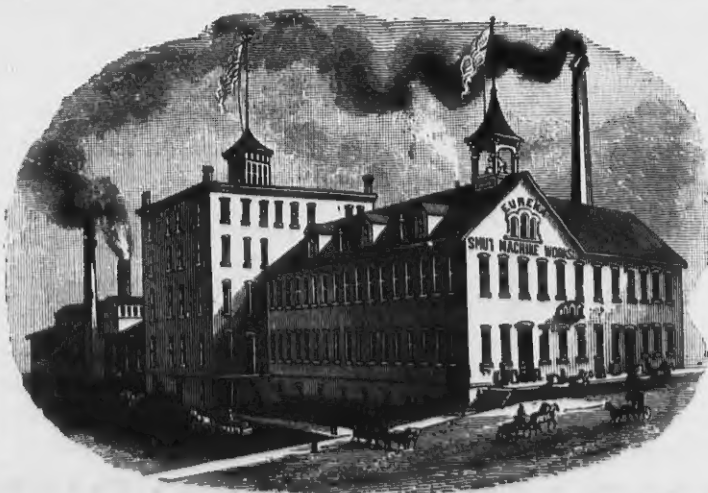
Fully Guaranteed to give the Best of Satisfaction

Pott's Patent Automatic Feeder for Roller
Mills, Purifiers, etc., very simple and cheap.
Perforated Sheet Material at low prices. Send
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We furnish these cloths by the piece or made up to order in our acknowledged superior manner.
Send for samples of cloth and sewing.

Established 1856.



Established 1856.

EUREKA GRAIN CLEANING MACHINERY

More than 18,000 Machines
in use in all parts of the World.

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Stout, Mills & Temple,

DAYTON, - - - OHIO.

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American Turbine Water Wheel.

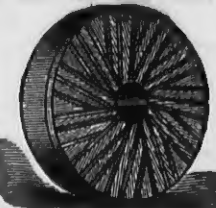
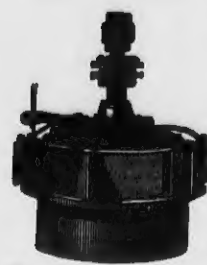
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Flour and Paper Mill Machinery, Best Chilled or Porcelain Rolls for Crushing Wheat and Middlings and

GENERAL MILL FURNISHINGS.



The AMERICAN TURBINE, as recently improved, is unequalled in the power utilized from a given quantity of water, and is decidedly the BEST PART GATE Water Wheel known. It has also been otherwise greatly improved.

Large Illustrated Catalogue Sent Free on Application.

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For Mills. Cohoes Iron Foundry & Machine Co. Send for Catalogue. COHOES, N. Y.

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VOECHTING, SHAPE & CO.,

SOLE BOTTLERS FOR

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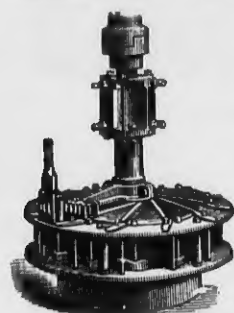
CELEBRATED MILWAUKEE LAGER BEER.

Cor. Second and Galena Streets,

MILWAUKEE, - - - WISCONSIN.

BOTTLERS' SUPPLIES CONSTANTLY ON HAND.

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POOLE & HUNT'S Leffel Turbine Water Wheel

Made of best material and in best style of workmanship.

Machine Molded Mill Gearing

From 1 to 20 feet diameter, of any desired face or pitch, molded by our own SPECIAL MACHINERY. Shafting, Pulleys, and Hangers, of the latest and most improved designs.

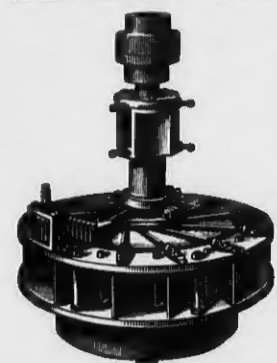
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Shipping Facilities the Best in all Directions.

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Fine New Pamphlet for 1883.

The "OLD RELIABLE" with Improvements, making it the Most Perfect Turbine now in use, comprising the Largest and the Smallest Wheels, under both the Highest and Lowest Heads in this country. Our new Pocket Wheel Book sent free. Address,

JAMES LEFFEL & CO., Springfield, Ohio.

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MANUFACTURERS OF RICHMOND'S CELEBRATED

Warehouse Receiving Separator, Grain Separator

AND OAT EXTRACTOR

WHEAT SCOURERS,

—AND—

Wheat Brush Machines,

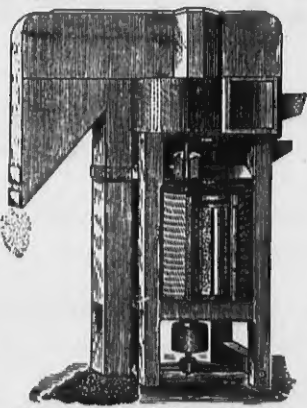
UPRIGHT AND HORIZONTAL BRAN DUSTERS,

CENTRIFUGAL FLOUR DRESSING MACHINES.

Thousands of these Machines are in successful operation, both in this country and in Europe. Correspondence solicited.

SEND FOR DESCRIPTIVE CATALOGUE.

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Adjustable Brush Smut Machine.

STEEL CASTINGS

Works, CHESTER, PA.

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FROM 1-4 to 15,000 LBS. WEIGHT.

True to Pattern, sound, solid, free from blow-holes, and of unequalled strength. Stronger, and more durable than iron forgings in any position or for any service whatever.

20,000 CRANK SHAFTS and 15,000 GEAR WHEELS of this steel now running prove this.

CRANK SHAFTS and GEARING specialties. STEEL CASTINGS of every description.

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CHESTER STEEL CASTINGS CO.,

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MILL OWNERS AND ENGINEERS will please take notice of the fact that the

STANDARD BOILER PURGE

is a perfect Boiler Cleaner in every respect and is guaranteed to remove ALL scale without foaming or injury to the plates. We solicit your correspondence. Send for circular and directions.

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WESTERN SUPPLY CO., Milwaukee, Wis.

The "Salem" Elevator Bucket.

Shovel Edge.

Seamless, Rounded Corners,

+CURVED HEEL.+



Runs Easy,

Strong and Durable.

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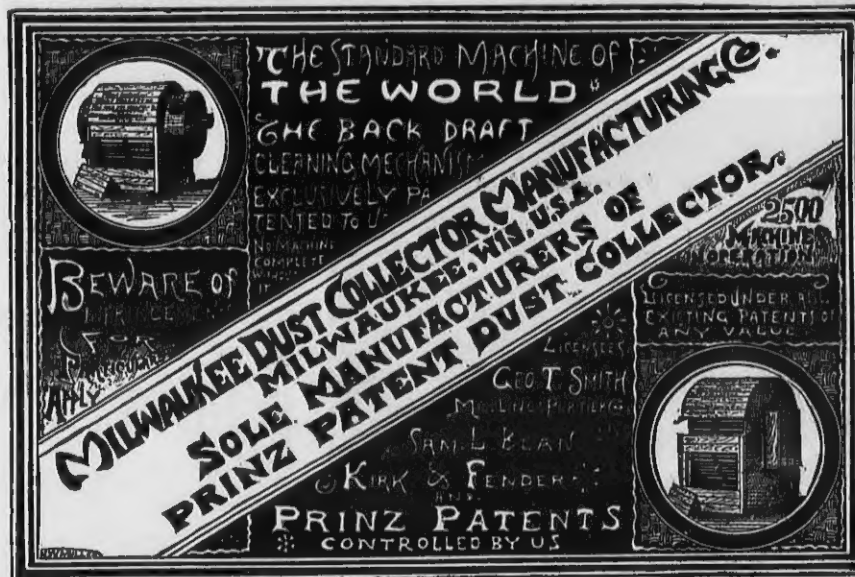
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New York Office & Salesroom, No. 9 Cliff Street.

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For Water Wheels

Cohoes Iron Foundry & Mch. Co. Send for Catalogue. Cohoes, N. Y.



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WILL FIND IT TO THEIR DECIDED ADVANTAGE TO INVESTIGATE THE CONCEDED MERITS OF

CRANSON'S SILVER CREEK

ROLLER BUCKWHEAT SHUCKER

ITS SUCCESS IS BEYOND QUESTION.

Its Value has been Demonstrated in more than 800 Cases.

IT IS THE ONLY PERFECT BUCKWHEAT SHUCKER IN THE WORLD.

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THE OLD RELIABLE ROUTE.

17 Miles the Shortest Line

—TO— GREEN BAY,

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—THE NEW ROUTE TO—

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The new line to Menominee is now completed, and opens to the public the shortest and best route to all points on the Michigan Peninsula.

CONNECTIONS.

AT PLYMOUTH with the Sheboygan and Fond du Lac Division Chicago & North-Western R'y for Sheboygan and Fond du Lac.

AT FOREST JUNCTION with Milwaukee, Lake Shore and Western Railway.

AT GREEN BAY with Chicago & North Western and Green Bay, Winona & St. Paul Railroads, for all points North and West.

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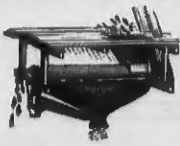
2000 BUSHELS PER DAY.

Shells wet or dry corn.

CHEAPEST AND BEST SHELLER.

PAIGE MANUF'G CO.,

No. 12 Fourth St., Painesville, O.



Improved + Walsh + Double + Turbine



This wheel has a perfect fitting cylinder gate and draft tube combined, and allows no water to escape when closed.

POWER GUARANTEED

equal to any wheel on the market using equal amount of water. Address for particulars,

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Phoenix Iron Works, Sheboygan Falls, Wis.

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We are the first introducers of the Chilled Iron Rollers for milling purposes, and hold Letters Patent for the United States of America. For full particulars address as above.

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3 TRAINS EACH WAY DAILY BETWEEN MILWAUKEE, FOND DU LAC, OSHKOSH, NEENAH and MENASHA.

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through from Chicago via Milwaukee without change on Day Trains.

New & Elegant Sleepers from Chicago to Stevens Point on Train leaving Chicago via C. M. & St. P. R'y Co. at 9 P. M.

Also a Superb Sleeper from Milwaukee to Neenah attached to the same train, leaving Milwaukee at midnight. N. B.—This Sleeper will be ready for passengers at Reed St. Depot, Milwaukee, at 9 o'clock P. M.

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1 A DAILY TRAIN TO Ashland, Lake Superior.

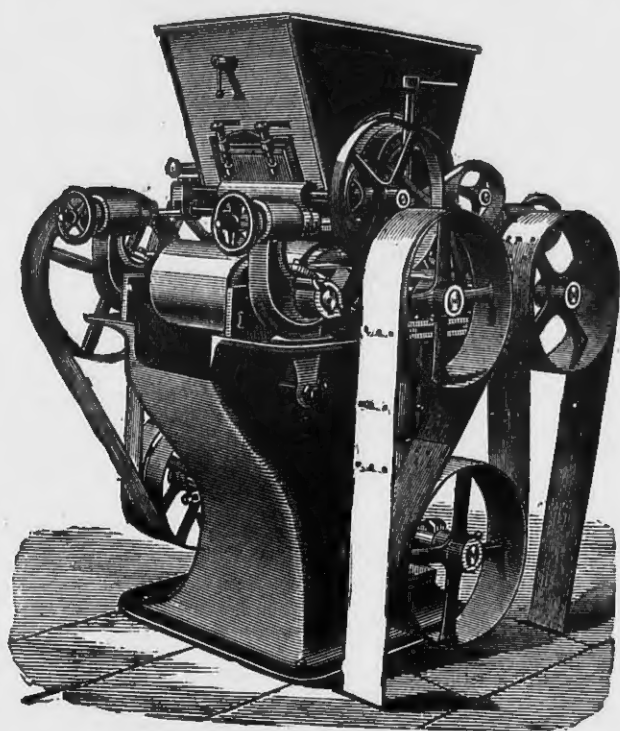
NO CHANGE OF CARS

From Milwaukee to Stevens Point, Chippewa Falls, Eau Claire or Ashland, Lake Superior.

These superior facilities make this the BEST ROUTE for GRAND RAPIDS, WAUSAU, MERRILL and points in CENTRAL WISCONSIN.

F. N. VINNEY, Gen'l Manager, Milwaukee.

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EDW. P. ALLIS & CO.**MILWAUKEE, WISCONSIN.****MILL BUILDERS AND FURNISHERS,**

AND SOLE MANUFACTURERS OF

GRAY'S PATENT NOISELESS**ROLLER MILLS**

Corrugated and Smooth Chilled Iron Rolls,

Wegmann's Patent Porcelain Roller.

We shall be Pleased to hear from Millers contemplating an improvement in their Mills, or Building new ones, and can furnish Estimates and Plans of our system of GRADUAL REDUCTION ROLLER MILLING. We have built and Changed over hundreds of Mills, in all parts of the Country, and using all classes of wheat, BOTH HARD AND SOFT, and can furnish references on application. The Largest and Best Mills of this Country are using our System and Roller Machines. Messrs. C. A. Pillsbury & Co., of Minneapolis, have over 400 PAIRS OF OUR ROLLS AND HAVE RECENTLY PLACED AN ORDER WITH US FOR ABOUT ONE HUNDRED AND TWENTY MORE. We have had a longer and larger experience in Roller Mill Building than any other manufacturers of this country. There is no EXPERIMENT ABOUT OUR SYSTEM and Rolls, so expensive to millers, and when the mills that we build or change over are ready to start, THEY DO SO AND WITH PERFECT SUCCESS, and there is no further changing, additions, stopping or expense. We manufactured and sold during the year 1881 over TWO THOUSAND FIVE HUNDRED pairs of rolls.

We can send competent men to consult with any millers who contemplate an improvement, and whom they can depend upon as being RELIABLE AND THOROUGHLY COMPETENT to advise them as to the number and kind of machines required, best method of placing them and the change required, if any, in the bolting and purifying system. WE DO NOT URGE A GENERAL CLEANING OUT OF ALL OLD MACHINERY unless we clearly see such would be the ONLY COURSE TO PURSUE to make a SATISFACTORY AND RELIABLE MILL. In nearly all instances we can use all the Old Machinery, leaving it in its original position, or with as slight a change as possible. We aim to make the Improvement so that it will be a Profitable one to the Miller, and at the least expense possible.

Our System is THOROUGH and RELIABLE, and our Roller Machine Perfected by Long Experience, and the Miller takes no chances in using them, as HE DOES with the New Fangled Notions of Drive and Adjustment on many other machines now TRYING TO FOLLOW OUR IMPROVEMENTS and still avoid our Patents, in BOTH of which THEY FAIL. We were the first to advocate the Entire Belt Drive, and were opposed by every other maker, who claimed it was not positive, etc., etc., and now that our Belt Drive is an ACKNOWLEDGED SUCCESS, and will SUPERCEDE EVERY OTHER STYLE, these advocates of Gear Drive have suddenly learned that Belts are the Thing. The same may be said of our Spreading Device, Feed Gates, and Adjustable Swing Boxes. Other Makers are now copying these. ALL these Features, including BELT DRIVE with ADJUSTABLE COUNTERSHAFT and TIGHTENER, the SPREADING DEVICE, FEED GATES, Adjustable Swing Boxes and Leveling Devices, Self-Oiling Boxes, etc., are secured to us by several Strong Patents, and we CAUTION MILLERS in regard to these Infringements of Our Patents and Rights, for we shall look to THEM for Redress. The matter is in the hands of our Attorneys, who will soon take VIGOROUS ACTION against the Makers and USERS OF MACHINES infringing Our Patents.

Several machines are already on the market which Broadly Infringe, and we are informed that other makers are now changing their Old Style Machines, and adopting in a large measure Our Improvements. BEWARE OF THEM.

Send for New Illustrated Catalogue, Giving full Information, to

EDW. P. ALLIS & CO.,**MILWAUKEE, WIS.**

Branch Office, 318 Pine Street, Benson Block, SAN FRANCISCO, CAL.

J. R. CROSS, Manager.[Please mention the UNITED STATES MILLER when you write to us.]

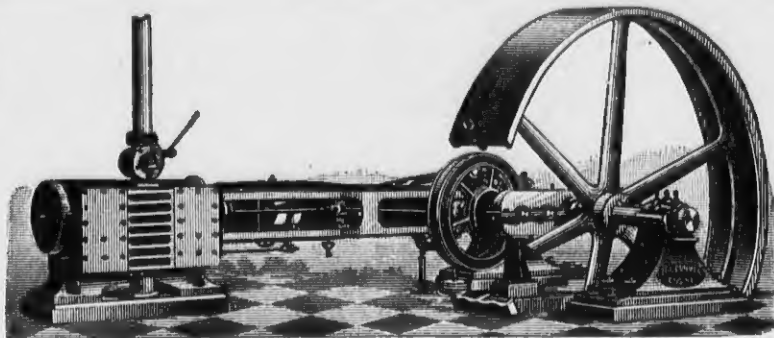
The Cummer Automatic Engine

IS UNEQUALLED IN

Ease of Operation, Effective Duty, Close Regulation,

In Quick Starting up to Speed,

Uniformity of Speed and Economy of Fuel.



Awarded the Gold Medal at the Cincinnati Exposition, and a Special Prize for Extraordinary Merit; also the Highest Medal at Louisville for the Best Automatic Engine.

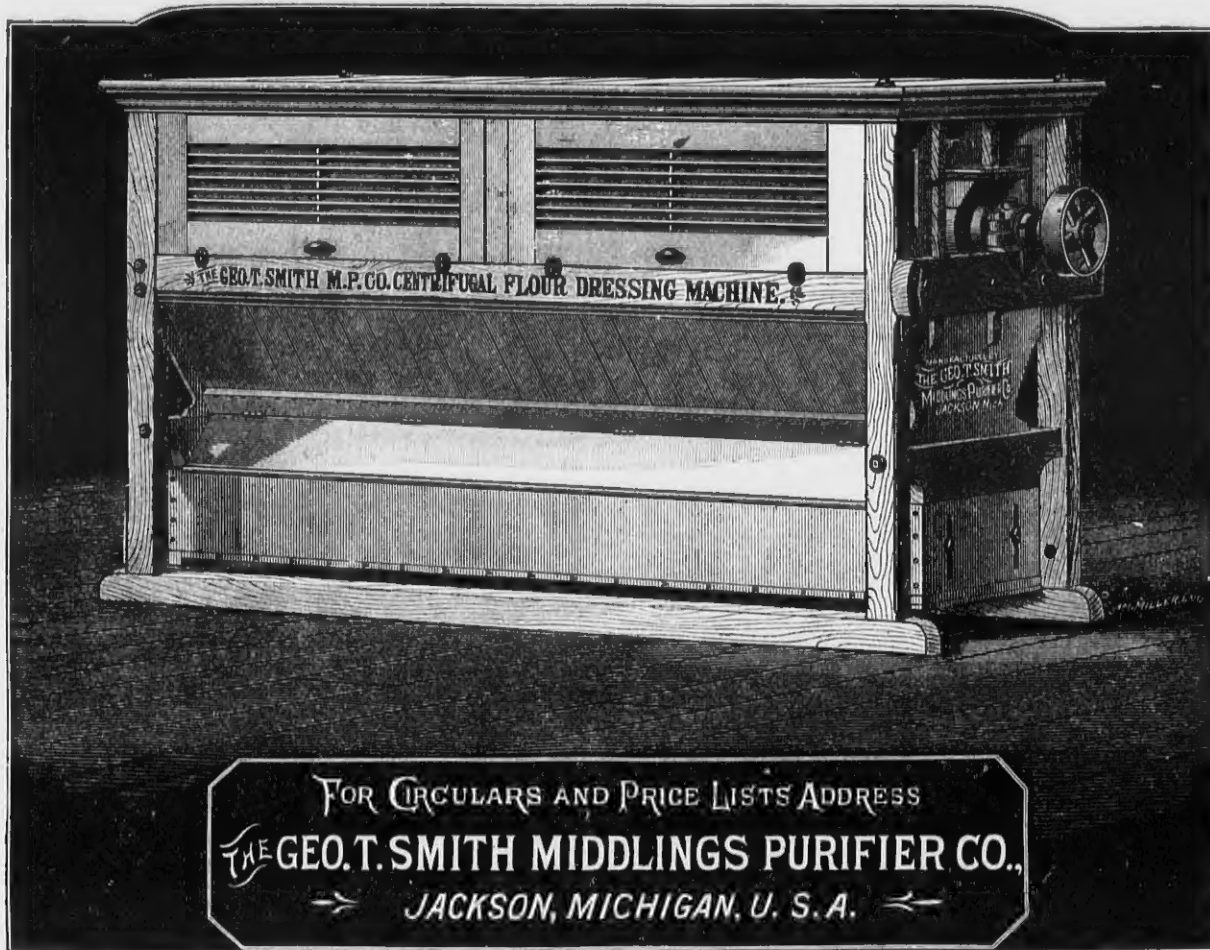
IT IS THE BEST ENGINE MADE.

These are points of Importance to every Miller and Manufacturer who expects prompt, even duty of an Engine. Printed matter, cuts, and information promptly furnished on application. Send for our 150 page Illustrated Catalogue.

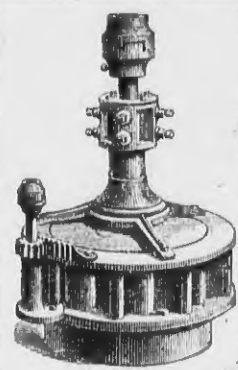
CUMMER ENGINE CO.,

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THE GEO. T. SMITH MIDDINGS PURIFIER CO.,
JACKSON, MICHIGAN, U. S. A.



Hopewell Turbine.

The most efficient and economical Water Wheel made, which cannot be broken or damaged by stones or timbers getting into it while running. Gives an average of 85 per cent. of power from half to full gate, and is fully warranted in every particular.

Manufactured at the
Variety Iron Works,
YORK, PA.

Send for Illustrated Catalogue and Price List.

Address, A. J. HOPEWELL, Edinburg, Va.

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LUDINGTON ROUTE.

Fast Freight & Passenger Line.

Freight Contracted on through Bills Lading to all points in

Michigan, Indiana, Ohio,
New York, Pennsylvania,
New England & Canada.
AT LOWEST RATES.

All freight insured across Lake Michigan. Passengers save \$2.75 to all points East. Dock and Offices, No. 24 West Water St., one block from Union Depot.

L. C. WHITNEY,
Gen'l Western Agent.

Southern Exposition at Louisville, Ky., 1883.

The Board of Directors has confirmed the following report of the Jurors on Awards for the Southern Exposition of 1883, and decreed an award therewith as follows:

REPORT ON AWARDS.

PRODUCT—Roller Mills (Gilbert & Livingston). EXHIBITOR—STOUT, MILLS and TEMPLE, Dayton, Ohio.

AWARD—A Medal for the **BEST ROLLER MILLS.**

The Award as made above is in the hands of the engraver, and will be delivered soon as completed.

J. M. WRIGHT,
General Manager.

Louisville, Nov. 26, 1883.

The above is an exact copy of notification of Award sent us. Cuts of Roller Mills referred to.



The Gilbert Combination

The CHAMPIONS!

Acknowledged by ALL USERS and DISINTERESTED JUDGES to be the Best Combination Mill in the World.

Reduction Roller Mill.

It is used in a Gradual Reduction Mill to make the breaks, and to do the scalping between same, and aspirates the stock after EACH separation. The products from the Mill are Bran for the Duster, and Middlings for the Purifier.

The Livingston Belted Roller Mill

The strongest, simplest, yet most completely adjusted Four-Roller Mill in the market. It can be used for reducing all kinds of grain.

For descriptive circular and price list, call on or address,

STOUT, MILLS & TEMPLE,

Sole Manufacturers,

Dayton, Ohio.

CHAS. RAKES, Lockport, N. Y., Sole Agent for New York, Pennsylvania, Virginia, W. Virginia, Maryland, New Jersey and New England States.

[Please mention the UNITED STATES MILLER when you write to us.]

